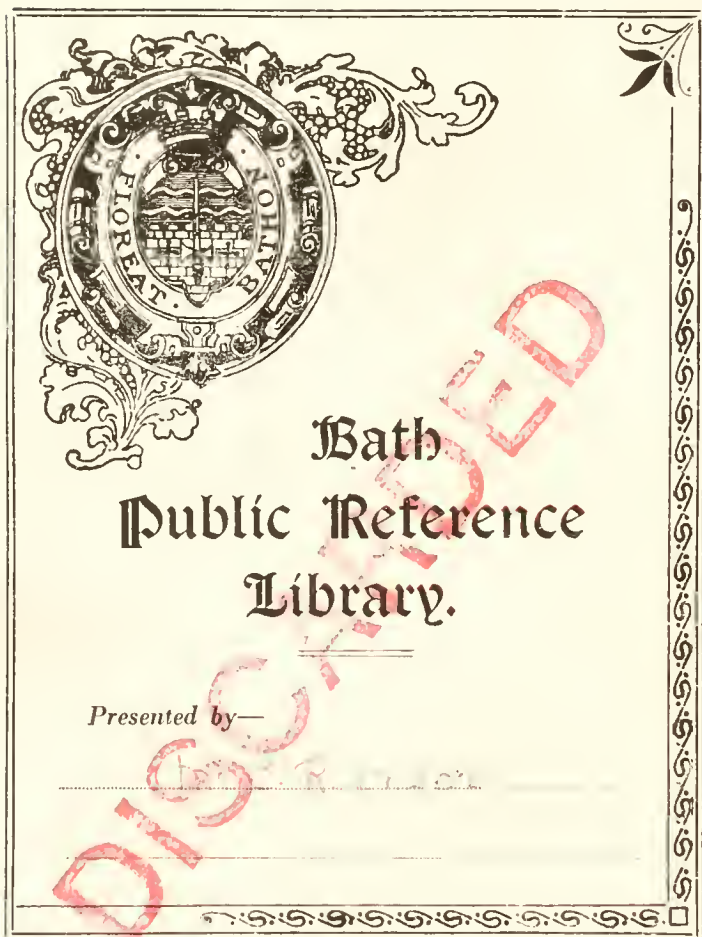


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BLACK'S MEDICAL ADVISER
FOR THE HOME

AGENTS

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BLACK'S MEDICAL ADVISER FOR THE HOME

BY

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*CONTAINING TWO FULL-PAGE ILLUSTRATIONS
IN COLOUR WITH KEY TO SAME*

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PREFACE

THIS volume is designed for those who, without having any medical knowledge, desire advice of a practical character, especially in matters affecting the preservation or restoration of health. Such a book is continually needed in every household, and this book has been prepared specially for use in the home.

J. D. C.

EDINBURGH,
March 1931.

Anyone desiring fuller information is advised to consult the larger work,
BLACK'S MEDICAL DICTIONARY,
by the same author, now in its
Tenth Edition.

FULL-PAGE PLATES IN COLOUR

PLATE		FACING PAGE
I.	Organs of the Body from before	I
II.	Organs of the Body from behind	I

*With a Key to the various organs
printed on an interleaf.*

FIRST AID HINTS

I. ACCIDENTS.—In cases of injury, treat first any bleeding that may be present (see **Hæmorrhage**). Next dress the wound (see **Wounds** and **Bandages**). If a broken bone, dislocation, or sprain be present, for the treatment see under **Fractures**; **Dislocations**; or **Joints, Diseases of**. In cases of internal injury, see **Abdomen, Injuries of**, and **Chest, Injuries of**. For methods of conveyance, see **Injured, Removal of**.

II. BURNS AND SCALDS.—In cases of burning, extinguish the flames by laying the person down and covering with some woollen article. For the treatment, see **Burns and Scalds**.

III. DROWNING.—After immersion in water, treat immediately before removal as described under **Drowning, Recovery from**.

IV. GASSING.—For a person rendered unconscious by gas, remove to fresh air and perform artificial respiration as for **Drowning**.

V. POISONING.—Keep any vomited material; if there is burning about the mouth, give milk or white of egg in water; if the poison is not known, give an emetic of mustard in water. Afterwards treat for the particular poison as given under **Poisons**.

VI. FITS AND CONVULSIONS.—Lay the child or person down comfortably, and for further treatment see the article on **Convulsions** in Children; also those on **Epilepsy** and **Hysteria**.

VII. UNCONSCIOUSNESS.—In any case of unconsciousness the person should be laid down flat. Fainting is the commonest cause of loss of consciousness—see **Fainting**. Other important causes are alcoholism—see **Alcoholism**; apoplectic stroke—see **Apoplexy**; and when the condition comes on slowly, Bright's disease—see **Uræmia**. Opium or other narcotic poison is also a possible cause—see **Poisons**.

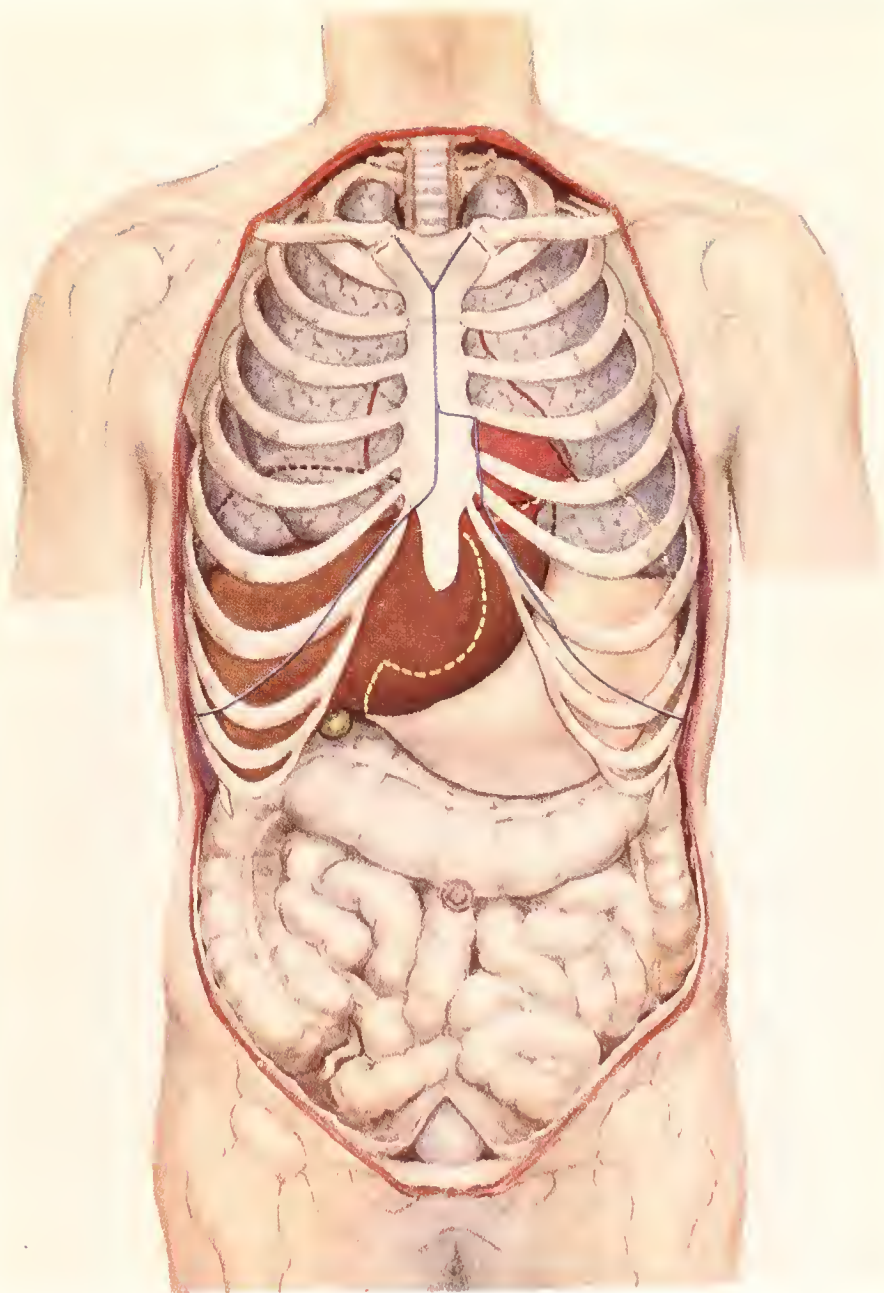
VIII. DEATH.—In cases of supposed death, see the article on **Death**, Signs of.

IX. PERSONAL HEALTH.—With regard to the preservation of personal health, numerous references to various articles throughout the book are given under the article **Health**.

X. CARE OF CHILDREN.—Information regarding infants is given under **Babies**, **Care of**, and **Infant-Feeding**. Matters that require special attention in older children are given under **Children**, **Peculiarities of**, and **School Children**. The measures for preventing infectious diseases are given under **Infection**. Backwardness in children is treated under **Mental Defectiveness**; and other conditions to which children are specially liable are mentioned under **Deafness**; **Ear, Diseases of**; **Nose, Diseases of** (section **Adenoids**); **Vision, Disorders of**; **Squinting**; and **Spectacles**. See also **Bronchitis**; **Croup**; **Glands, Diseases of**; **Joints, Diseases of**; and **Rickets**.

XI. NURSING.—Directions regarding attendance on the sick are given in the article on **Nursing**, from which references are also made to various special subjects, and descriptions of applications like **Bandages**, **Bed-changing**, **Fomentations**, **Poultices**, **Blisters**, **Plasters**, etc.

XII. SYMPTOMS OF DISEASE.—The symptoms most likely to attract attention are mentioned, and the diseases which most commonly produce them are indicated, under the following headings: **Diarrhoea**; **Vomiting**; **Expectoration**; **Breathlessness**; **Urine**; **Stools**; **Inflammation**; **Fever**; **Headache**; **Backache**; **Colic**; **Dropsy**; **Paralysis**; **Abdomen, Diseases of**; **Chest, Diseases of**; **Nervous Diseases**. Under these headings references are given to other places where the individual diseases are fully treated.



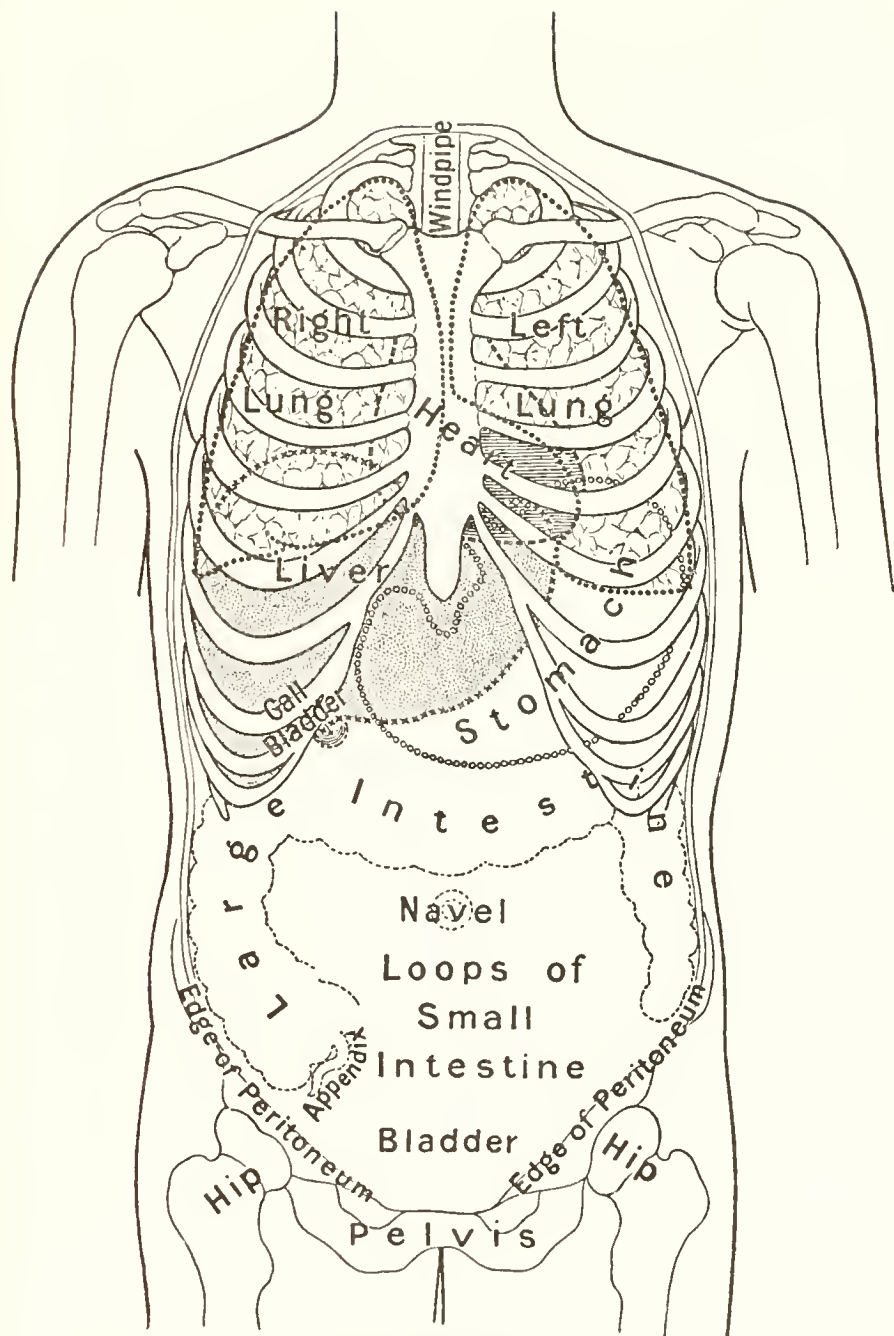


PLATE I.—ORGANS OF THE BODY FROM BEFORE, WITH THE SOFT PARTS REMOVED.

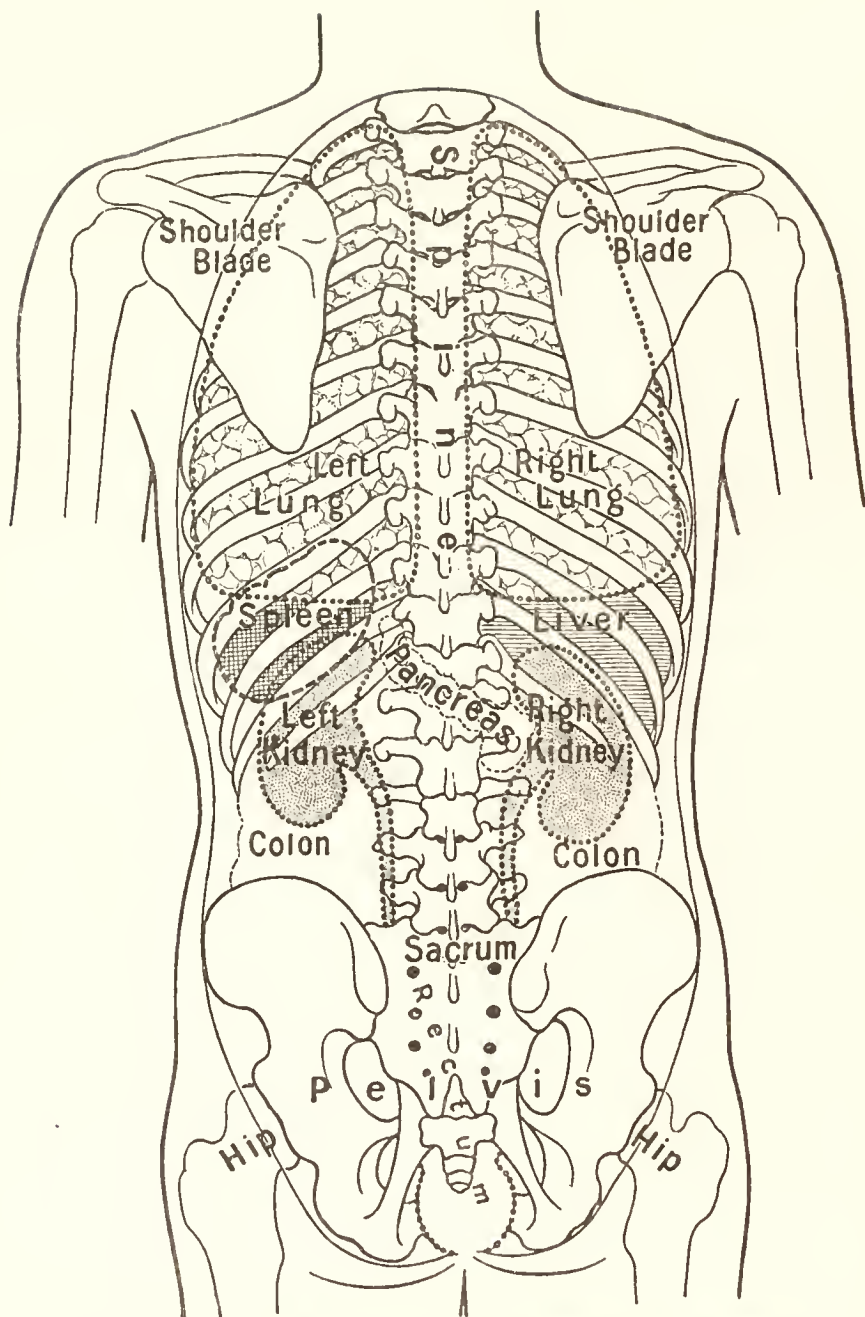
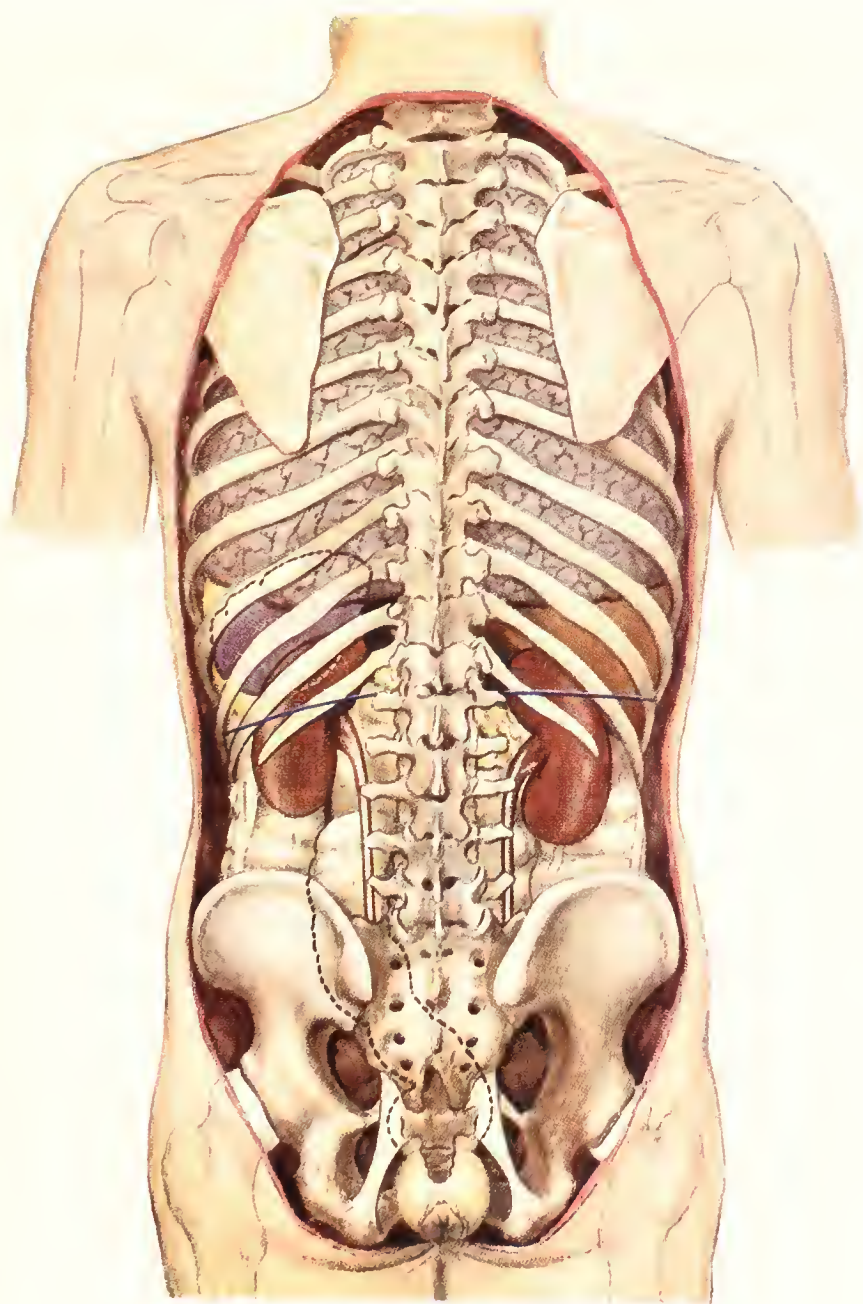


PLATE II.—ORGANS OF THE BODY FROM BEHIND, WITH THE SOFT PARTS REMOVED.



A

ABDOMEN is the lower part of the trunk.

The principal contents of the abdominal cavity are the digestive organs, *i.e.* stomach, intestines, and the associated glands, the liver and pancreas. Against the back wall on either side lie the kidneys, protected also to a great extent by the last two ribs. High up on the left and partly behind the stomach lies the spleen. The great blood-vessels and nerves, the absorbent vessels and the glands connected with them, lie on the back wall, and the remainder of the space is taken up by the intestines or bowels (*see* **INTESTINE**).

The *pelvis* is that portion of the abdomen which lies within the bony pelvis (*see* **BONES**), and contains the rectum or end part of the intestine, the bladder, and, in the female, the womb, ovaries, and other organs of generation.

ABDOMEN, DISEASES OF.—(*See under* **STOMACH, DISEASES OF**; **INTESTINE, DISEASES OF**; **DIARRHŒA**; **LIVER, DISEASES OF**; **PANCREAS, DISEASES OF**; **KIDNEY, DISEASES OF**; **BLADDER, DISEASES OF**; **HERNIA**; **PERITONITIS**; **APPENDICITIS**.)

Symptoms.—The symptoms of various diseases will be found under the above headings, and only some general symptoms of abdominal disease, or symptoms whose meaning is not plain, but which nevertheless point to trouble in definite organs, will be mentioned here.

PAIN.—This is a most important symptom, because the internal organs

being devoid of ordinary sensation, pain in them generally means a considerable interference with structure or function. The *site* of the pain may indicate the organ affected. Thus pain under the ribs on the left, or running up the back to the throat, generally points to the stomach as being at fault. When it is felt on the right high up, and shoots through to the right shoulder, it indicates trouble connected with the liver or gall-bladder. Pain situated on the right, and low down in the iliac region, may arise from a diseased appendix. On the left, and low down, or at the exit of the bowel, it means some rectal trouble. Finally, pains situated vaguely all over the front of the abdomen, especially round the navel, points to inflammation of the peritoneal lining of the abdomen, or to irregularity in movement of the small intestine. The *character* of the pain is also important. A dull, aching pain is not generally serious, though it may indicate chronic peritonitis or obstruction. (*See* **PERITONITIS and INTESTINE, DISEASES OF**.) A twisting, griping pain is generally, *e.g.* in babies, due to spasmodic movements of the small intestine, often produced by errors in diet, and called colic. A straining pain with frequent calls to stool indicates irritation low down in the large bowel; and the pains of stomach trouble are of various nature. (*See* **DYSPEPSIA**.) Sudden, colicky, agonising pain is very often due to the passage of a gall-stone, if situated high up on the right, shooting through towards the

ABDOMEN, DISEASES OF

back, or to the passage of a renal calculus, if shooting from the back down into the groin. Pain of a dull character slightly to the right of the pit of the stomach suggests duodenal ulcer or the presence of gall-stones.

TENDERNESS on pressure is generally a sign of inflammation either of an organ situated beneath the tender spot, or of the peritoneum. (See **APPENDICITIS, PERITONITIS.**)

VOMITING is an important symptom. (See **VOMITING.**) When due to irritation of the stomach, it usually ceases as soon as the contents of this organ are brought up. If it persist, it may be due to some obstruction in the bowels, or may be of nervous origin, *e.g.* in sea-sickness, or cerebral tumour, and have no direct connection with the abdomen.

DIARRHŒA is a very important symptom, generally of serious import. (See **DIARRHŒA.**)

SWELLING of the abdomen is often so marked as to call the patient's attention to it. This may be due merely to excessive deposit of fat, especially in elderly people, for example, in women at the menopause. (See **CORPULENCE, DIET.**) Enlargement, of course, occurs in pregnancy; and married women should remember this before concluding, as is frequently done, that they are the subject of some tumor-growth. The abdomen in habitual constipation may become more distended partly by the undischarged remnant of the food, and partly by gases arising from its decomposition, or this condition may be due to chronic obstruction of the bowels. (See **CONSTIPATION and INTES-TINE, DISEASES OF.**) Finally, a collection of fluid may produce the swelling (see **DROPSY**), or it may be due to enlargement of a single organ.

VISIBLE MOVEMENTS are sometimes seen, due to the bowels being distended and contracting forcibly in the attempt to drive their contents onwards. They indicate (unless they are visible merely on account of

ABDOMEN, DISEASES OF

extreme thinness of the abdominal wall) some obstruction in the bowel.

The differentiation of abdominal diseases is often one of the most difficult problems with which even an expert has to deal, and frequently it is only after a period of observation, lasting in difficult cases perhaps some weeks, and including an X-ray examination, that a diagnosis of approximate accuracy can be arrived at. This is partly due to the difficulty or impossibility of feeling the surface and dimensions of the contained organs, *e.g.* the kidneys, especially in stout persons; partly to the vagueness of symptoms set up in organs which are very little sensitive to even extreme changes in their structure; and partly to the readiness with which the organs change their relative positions, and to the great changes in shape and position often brought about by previous disease.

Treatment.—Details of treatment are given under the headings of the various diseases. On the whole, people are rather too much given to regarding abdominal symptoms as trivial and amenable to home treatment. Many a case of incurable dyspepsia would have been got rid of in its early stages if its symptoms had not been neglected, and, not infrequently, cases of acute obstruction of the bowels are lost because a dose of castor oil was taken when a medical man should have been consulted. In this connection one may say that whenever the three symptoms of (a) abdominal pain, (b) vomiting or retching, and (c) stoppage of the bowels for a day or two, or stoppage followed by a little diarrhœa, have occurred together, the case demands the attention of a skilled medical adviser. If severe abdominal pain be directly traceable to some dietetic indiscretion, the offending material should be got rid of speedily by an emetic, if it is still in the stomach (see **EMETICS**); or by a purgative if the symptoms are referable to the

ABDOMEN, INJURIES OF

bowels. If the pain be gripping in character, *e.g.* in babies, relief is often given by pressure; thus nurses often lay their charges stomach downwards across the arm, or adults get some relief by lying face downwards on a pillow. (*See COLIC.*) The pain of inflammation is soothed by poultices or fomentations (*see POULTICE*); or sometimes better by an ice-bag. Chronic pains and vomiting are treated by counter-irritation (*see BLISTERS*) as well as by internal remedies.

ABDOMEN, INJURIES OF.—Rupture of the bowel occasionally follows a blow or wound and is almost necessarily fatal in a few days, unless the abdomen be opened by a surgeon and the torn bowel stitched within a few hours of the accident.

Straining to lift a weight beyond the strength, or excessive straining at stool, may force a loop of the intestine through the muscular part of the abdominal wall, so producing a hernia or rupture. Though there is often a feeling that something has given way, or even the noise of a crack, there is, as a rule, no immediate danger, the bowel going back into the abdomen again, but leaving the abdominal wall permanently damaged. (*See HERNIA.*)

ABORTION (*see MISCARRIAGE*).

ABRASION means the rubbing off of the surface of the skin or of a mucous membrane due to some mechanical injury. Such injuries, though slight in themselves, are very apt to allow entrance of dirt containing organisms and so to lead to an abscess or some severer form of inflammation.

Treatment.—The most effective form of treatment consists in painting over the abrasion at once with some astringent and antiseptic fluid such as tincture of iodine or strong spirit. Abrasions on mucous membranes are best covered by some protective application such as glycerin or boracic acid.

ABSCESS

ABSCESS is a localised collection of pus or matter. A minute abscess is known as a pustule, a diffused production of pus is known as cellulitis or erysipelas (*see ERYSIPELAS*). An abscess may be acute or chronic.

An acute abscess is one occupying in its development some days, or in some cases weeks, and characterised by a definite set of symptoms.

The collection of pus or matter which forms an abscess is produced as follows:

When bacteria have gained access to the body, for example, by a wound, they rapidly multiply, and, by the formation of poisonous substances, irritate the surrounding tissues. The leucocytes, or white corpuscles of the blood, collect and in turn die, and form the white constituent of the pus (pus corpuscles).

Symptoms.—The important signs are redness, warmth, swelling, and pain; and, besides these, when the abscess is well developed a considerable amount of fever, perhaps with delirium, sets in, and the temperature rises to 100-104° Fahr. Later, as the abscess is distended almost to bursting, the skin becomes reddish blue, glazed, and thin; and this is known as 'pointing' of the abscess; or if the abscess is very deep-seated the skin over it becomes swollen, and 'pits' on pressure. The lymphatic glands in the neighbourhood may be swollen and tender. Immediately the abscess is opened, or bursts, the pain disappears, the temperature falls rapidly to normal, the elasticity of the tissues around the cavity diminishes its size, and the healing of the small space left proceeds rapidly.

Treatment.—Nature's efforts may be aided by the application of poultices (*see POULTICES*), or better, because of their cleansing effect on the skin, by applying warm antiseptic fomentations, *e.g.* boracic lotion. These have the effect of diminishing the pain; of aiding resolution, if abscess formation is not going to take

ABSCESS, CHRONIC

place; and of hastening the formation of an abscess cavity, and softening the over-lying tissues if the latter process has already begun. When this happens, it may be necessary to lance the abscess.

After the abscess is opened a simple wet dressing, of moist lint covered by gutta-percha tissue, and this again covered by absorbent wool (to absorb the remaining discharge) and a bandage, should be applied and changed daily.

ABSCESS, CHRONIC.—A chronic abscess is one which takes weeks or months for its development, and is in the vast majority of cases tuberculous. It is sometimes called a 'cold' abscess.

ABSORBENT VESSELS (*see* LYMPHATICS).

ABSORPTION (*see* DIGESTION).

ACCOMMODATION is the faculty possessed by the eye of altering its refractive power so that rays of light, whether from a near or distant point, are brought accurately to a focus on the retina. It is effected by means of the elasticity of the crystalline lens.

ACETABULUM is the cup-shaped socket on the pelvis in which rests the head of the femur or thigh-bone, the two forming the hip joint. (*See* HIP JOINT.)

ACETANILID, or ANTIFEBRIN, is a white crystalline powder often used in neuralgia and rheumatism in doses of 2 to 10 grs.

ACETIC ACID, also called pyroligneous acid, is prepared in large quantities by the distillation of wood and subsequent separation from tar. In the pure form it is solid, being then known as glacial acetic acid.

In strong solution acetic acid is used to destroy warts or raise blisters. In weak solution, or as vinegar, it is taken internally, mildly astringent. It is used often to reduce obesity, but is apt to impair the digestion and cause anæmia. In cases of great and weakening sweating it is most useful, because, sponged over the skin, it

ACIDS

checks perspiration and produces a sense of grateful coolness; for this purpose a few tablespoonfuls of vinegar may be added to a quart of water. Used similarly it is good for headache.

ACETONE is a substance found in the urine and on the breath in wasting conditions like cancer and severe dyspepsia, and particularly in diabetes.

ACIDITY.—This is a vague term, more used in popular language than in scientific medicine, and meaning that the reaction of the blood, or of one or more of the secretions, is less alkaline or more strongly acid than normal, while a considerable number of symptoms is rightly or wrongly attributed to the condition. (*See* DYSPEPSIA.)

ACIDOSIS is a general term for a group of diseased conditions which show the common feature of the presence in the urine of acetone and allied bodies such as diacetic acid and oxybutyric acid.

Symptoms.—General lassitude, vomiting without apparent cause, and the presence of the above-mentioned substances in the urine form the slightest manifestations of the condition; in some children these attacks appear periodically, but the tendency to them passes off about the age of twelve or fourteen. In wasting diseases and in diabetes the condition may become serious; and, a state of coma ensuing, the disease may have a fatal termination.

ACIDS.—These are substances which combine with alkalis to form salts. The strong mineral acids, especially chromic and nitric, with pure acetic and carbolic from among the organic acids, are used as caustics to remove outgrowths such as corns, warts, piles, and also to destroy diseased tissue in poisoned wounds and spreading sores.

Weak acids are given in dyspepsia (*see* DYSPEPSIA), usually after meals, to stimulate the stomach wall. For this action hydrochloric acid (the acid naturally present in the gastric juice),

ACNE

or nitrohydrochloric acid, is chiefly used.

For the use of special acids see under ACETIC ACID, CARBOLIC ACID, etc.

ACNE is a chronic skin disease affecting the forehead, nose, chin, chest, back of the shoulders, and outer side of the thighs, or one or more of these regions.

Causes.—It is found especially in young persons of both sexes between about fourteen and twenty years of age, especially in those who suffer from cold hands and feet, chilblains, and slow circulation. Constipation makes it worse, and in many cases it is associated with dyspepsia or other irregularities. Any local irritation, such as a rough or soiled hat-band on the forehead, may bring out a crop of acne pimples in those who suffer from the disease. Want of effective washing, with insufficient exercise and perspiration, causing sluggish action of the skin glands, renders it much worse. The suppuration has been attributed to various bacteria.

Symptoms.—There are various general symptoms, such as constipation, dyspepsia, bad circulation, which act as causes. The eruption itself consists of little black spots which indicate the mouth of small sebaceous ducts choked with dust or dirt, from which a long, wormy-looking, fatty mass can be squeezed; hard pimples generally showing one of these 'black-heads' on the top; little pustules surrounded by a slight degree of inflammation, which gradually grow, burst, and then heal; and hard lumps, sometimes half an inch across, which last for weeks or months, slowly suppurate, and leave a permanent hardness or scar.

Treatment.—The general health must be looked to, and dyspepsia, constipation, and similar errors treated. If the general health and physique be poor, cod-liver oil is very useful, or various other tonics may be taken. Sometimes anæmia needs treat-

ACNE ROSACEA

ment by iron. If the subject of the disease lead a sedentary or inactive life, active exercise—such as in tennis, football, cycling—should be taken, and the hygiene of the whole skin should be attended to by cold baths, rough towels, etc. The most important point in treatment is the daily washing of the affected areas with soap and *hot* water; after which they should be quickly immersed in cold water. The soap should be plain, or sulphur soap, or, if the skin be very fine, a superfatted soap. After washing, the skin should be well rubbed with a flesh-brush or towel. Ointments are apt to be harmful, but the skin may be dabbed with calamine lotion, containing 3 per cent of boracic acid, or with eau de Cologne; a mixture of ichthyol and glycerin may be used in a similar way at night. The contents of the sebaceous glands, wherever a 'black-head' shows, should be regularly squeezed out, by gentle pressure with a fine tube or 'comedo-extractor', after washing. The suppurating lumps may be touched with a match sharpened to a point and dipped in pure carbolic acid, only a minute drop being applied; this helps their disappearance. Painting small areas half an inch or thereabout in size with strong tincture of iodine has the same effect. Vaccines prepared from the bacteria in the pimples are also given by injection.

ACNE ROSACEA is a chronic inflammation of the face, especially of the nose, associated with enlargement of the minute blood-vessels, and leading to lumpiness and a red or dusky-copper colour.

Treatment.—The milder form is lessened by attending to the dyspepsia, or the bad circulation which is its cause; avoiding exposure to cold winds, and by painting with Goulard's water, or calamine lotion. The severer form is only to be treated by avoiding alcohol, and by electrolysis of the enlarged veins here and

ACONITE

there, to cause scarring and contraction, or by the actual removal of pieces of skin.

ACONITE (also known as 'Wolf's-bane', or 'Blue rocket', or 'Monk's-hood') is an extremely poisonous plant found in different species all over the world, and largely grown for its appearance in gardens. All parts of the plant are poisonous. The root has been mistaken for horse-radish, although the resemblance, to those who know horse-radish by sight, is not very great. Liniment of aconite is much used to relieve pain in sprains, bruises, and rheumatism. In feverish states in children, such as tonsillitis, tincture of aconite is a favourite remedy, and a drop or two drops diluted with water may be given in small doses spread over two hours or more.

ACROMEGALY is a chronic disease characterised by increased massiveness of the bones, most noticeable in the jaws, hands, and feet. It is caused by disorders of the pituitary body.

ACROMION is the bone forming the tip of the shoulder and giving its squareness to the latter.

ACTINOMYCOSIS is a chronic suppurative disease affecting cattle, in which it is known as 'Woody Tongue', and sometimes found in man.

ACUTE DISEASE.—A disease is said to be acute in contradistinction to chronic when it comes on rapidly and produces death rapidly, or goes on to speedy recovery, *e.g.* acute bronchitis; or the word is used, though less often, in the sense of severe or sharply painful, *e.g.* acute sciatica, acute neuralgia.

ADDISON'S DISEASE consists of a state of anæmia, weakness, depressed circulation, and dyspepsia, while its most obvious symptom is a peculiar bronzing of the skin. It is due to disease of the suprarenal bodies or of the structures near them. Medical advice should be sought,

AFTERPAINS

although a cure can seldom be looked for.

ADENITIS means inflammation of a gland.

ADENOIDS. (*See NOSE, DISEASES OF.*)

ADHESION.—This means the uniting together of structures which should normally be separate and freely movable. It is the result of acute or chronic inflammation. The medium by which the attachment takes place may at first be fibrin (as a result of acute inflammation), but later is fibrous tissue either in masses or in bands. Adhesions are apt to form in the abdomen after operations, and sometimes cause serious discomfort by interfering with the movements of the stomach and bowels.

ADRENALIN is an extract derived from the suprarenal glands of animals. (*See SUPRARENAL GLANDS.*)

ADULTERATION OF FOODS.—Fifty years ago there was little control exercised by the law over the quality of food-stuffs, but severe penalties are now imposed for selling adulterated food and drugs, while in large towns there are public analysts by whom any one may get foods or drugs tested and certified at a small fee. Still more effective laws have been passed regarding milk and other dairy produce, which form most important articles of human food.

ÆTHER (*see ETHER, ANÆSTHETICS*).

AFTERBIRTH, or **PLACENTA**, is the name given to the thick, spongy disc-like cake of tissue which connects the embryo with the inner surface of the womb, the embryo otherwise lying free in the amniotic fluid. The name 'afterbirth' is given to the structure, because it is expelled from the womb in the third stage of labour (*see LABOUR*). Various dangers, of which the chief are flooding and puerperal fever, arise from its retention or the non-expulsion of parts of it.

AFTERPAINS are pains similar to but feebler than those of labour,

AGAR

occurring in the two or three days following childbirth.

Causes are generally the presence of a blood-clot or retained piece of placenta which the womb is attempting to expel.

Treatment.—They should be borne if not very bad, because their effect is salutary. If they are severe, hot fomentations may be applied to the abdomen, and an occasional method of treatment consists in the administration of hot vaginal douches.

AGAR is a gelatinous substance prepared from Ceylon moss and other East Indian seaweed. It is frequently added to the diet in order to give bulk to the latter for the purpose of relieving constipation.

AGE, NATURAL CHANGES IN.—

The tissues, as age advances, become more rigid and less elastic. The bones become more brittle. The ligaments are stiffer, so that contortions of the body and limbs, as in gymnastic feats, become impossible. Fat is deposited beneath the skin in middle life and absorbed again in old age, leaving the skin wrinkled. Fat becomes later formed in internal organs, *e.g.* the heart, weakening their activity. The skin becomes thin, is less well lubricated, and its vessels do not react properly to heat and cold, so that the cold is acutely felt. The chief change is in the blood-vessels, whose walls become first thicker, then more brittle, so that hæmorrhage (*e.g.* into the brain, with apoplexy) more readily occurs. This change is hastened by alcoholic excesses and some diseases, and the extent to which it has occurred is the measure of the interference with the employments of active life, so that it has been said, 'A man is as old as his arteries'. This thickening of the arteries in the brain and consequent narrowing of their calibre, causing a poorer blood-supply to the brain, is one of the chief reasons of mental feebleness in old age. The menopause occurs in women between forty-five and fifty

ALBUMINURIA

(*see* MENSTRUATION), and men sometimes about the age of sixty have some months' illness and feebleness, after which strength again returns. Loss of elasticity in the lens of the eye brings about the need of spectacles for reading soon after the age of forty.

AGUE (*see* MALARIA).

AIR PASSAGES.—These are the nose, pharynx, or throat (the large cavity behind the nose and mouth), larynx, trachea, or windpipe, and bronchi or bronchial tubes. The air, on entering the nose, passes through a high narrow passage on each side, the outer wall of which projects along three lines (the turbinate processes), so as almost to touch the dividing 'septum' between the nostrils, thus making on each side three passages or meatuses, in which the air is warmed, moistened, and relieved of particles of dust. Mouth-breathing is, accordingly, a bad habit because the air is not prepared for entrance to the lungs.

ALBINISM is a state of poverty or absence of pigment in the superficial tissues of the body, producing a pale pink colour of the skin, whiteness of the hair, and redness of the iris and interior of the eye.

ALBUMINURIA means a condition in which albumin is present in the urine. It is of immense importance, both because it is itself a drain upon the health, and because it is often a symptom of serious heart or kidney disease.

Treatment.—The treatment for albuminuria in other diseases is given elsewhere. (*See* BRIGHT'S DISEASE, HEART DISEASE.) When albuminuria occurs without any disease of heart or kidneys, as it sometimes does in young persons, a change of diet is necessary; eggs should be avoided, and all highly albuminous food, such as meat, beans, peas, partaken of very sparingly. Iron tonics and vascular tonics, like digitalis, are given. Unless bathing be found distinctly in-

ALBUMIN WATER

jurious (cold baths form the cause in some cases), a cold plunge followed by rapid friction with a towel should be taken daily, and a warm or Turkish bath weekly. Alcohol, which has a special action in weakening the tone of the blood-vessels, must be absolutely avoided in every form. Early rising and moderate exercise are important; and too much sleep on the one hand, and feats of endurance on the other, must be avoided. Most important of all is daily movement of the bowels.

ALBUMIN WATER is very frequently used for administration as a light form of nourishment to patients with weak digestion or suffering from diarrhœa or some condition in which only very small amounts of food can be borne. To prepare albumin water a raw egg is broken in two on the edge of a cup. The white is allowed to escape by passing the yolk from one half of the shell to the other. The white is then whisked for 10 minutes to a stiff froth; $\frac{1}{2}$ pint of cold water is added; and it is allowed to stand for an hour to dissolve. Lemon juice may be added to flavour and a cupful may be given at one time.

ALCOHOL, more correctly **ETHYL ALCOHOL**, is a liquid obtained by the action of yeast on solutions of sugar, especially of grape sugar or glucose. Carbonic acid gas is also formed in the process and escapes. After fermentation of the sugary fluid has taken place, the alcohol is separated from the water by distillation, and from the last traces of water by the action of lime, which absorbs the latter. Absolute (or water-free) alcohol is very expensive owing to the difficulty of complete separation. It is a powerful irritant, and even in moderate quantities a poison. Rectified spirit, or spirit of wine, contains 90 per cent of alcohol by volume, and is used to make essences, tinctures, and four weaker spirits of 70, 60, 45, and 20 per cent strength.

ALCOHOL

Varieties of alcoholic liquors.—

Spirits and wines sold under various names differ very much in the amount of alcohol contained in different samples under the same name, but the following table gives a general idea of the percentages of alcohol present in the various forms of beverage. Many of the stronger forms are sold commonly in a more diluted state than that indicated in the table. Some of the weaker wines on the other hand are 'fortified' by the addition of spirit to confer on them more stimulating properties.

Rum	}	.	over 50 or 60 per cent
Brandy			
Whisky			
Gin and Liqueurs		.	about 50 „
Port	}	.	about 20 „
Sherry			
Madeira			
Champagne	.	.	12 „
Claret	}	.	about 10 „
Burgundy			
Moselle			
Hock	}	.	about 8 „
Strong ale			
Cider	.	.	
Porter	}	.	2 to 5 „
Beer			
Ginger beer	.	.	1 to 3 „

Effects of alcohol.—Alcohol when taken as a food is very quickly and completely absorbed. About one-fifth of any dose taken is absorbed from the stomach and almost the whole of the remainder is absorbed in the upper part of the small intestine within two or three hours of having been taken. Alcohol supplies a certain amount of energy for bodily activity, and thus sparing the other tissues, leads to the deposit of fat, especially if the alcohol is habitually taken in the form of beer.

With regard to the mental effect of alcohol, this is dependent partly upon its effect on the circulation and partly on its anæsthetic action on the nervous system, dulling small pains and the sense of worry and anxiety. Owing to a similar dulling action

ALCOHOL

upon the higher intellectual faculties, self-criticism and self-control are also to a considerable extent lessened, and the person tends to become reckless. If a larger dose be taken, the functions of sense perception and skilled movement are dulled and deteriorated, with the result that there is a certain clumsiness of behaviour. The person now begins to make ill-adjusted movements, shows some slurring of speech, and becomes less quick and less capable in performing acts which require decision and promptitude, *e.g.* avoiding a collision when driving a motor-car. In a further stage the intellectual processes of judgment, self-criticism, and self-control are largely suspended and the functions of sense perception and skilled movement become very greatly impaired until ultimately a heavy sleep supervenes which lasts until the alcohol absorbed by the nervous system has been oxidised and consumed.

With regard to the action on digestion, moderate doses of alcohol increase the secretions of the stomach and thus may aid digestion in persons in whom these secretions are defective. When, however, alcoholic beverages are taken habitually over long periods, and especially in the more concentrated form of spirits, they exert a very pronounced effect of irritation upon the mucous membrane of the stomach and thus lead to chronic indigestion.

The effect of alcohol on length of life has been much disputed. The official statistics issued by the Registrar-General, however, indicate a very heavy mortality among persons occupied in the liquor trade, who are known to consume more than the average amount of alcohol. The experience of insurance companies has made them adverse to admitting on ordinary terms persons who are habitual users of alcoholic beverages in large amount.

Uses of alcohol.—*Externally* it is

ALCOHOLISM, ACUTE

used in the cheap form of methylated spirit to cleanse the skin of oily, fatty, or resinous substances, which water will not remove. Also to harden the skin of the feet before a long walk, or that of the back in persons confined to bed for long periods, and so prevent bed-sores.

As a food alcohol may be taken with benefit by the feeble, the aged, the dyspeptic, and especially those suffering from exhausting diseases.

As a stimulant to the heart and respiration, alcohol is very extensively employed in disease; but this benefit is only marked in those who have previously been abstemious.

ALCOHOLISM, ACUTE.—This is the condition produced by taking excessive quantities of alcohol over a short period. The earlier effects have been mentioned under ALCOHOL. Some persons tend to become quarrelsome and others to be depressed when larger quantities have been taken. A special form of mental change in which delirium is combined with tremors and mental hallucination comes on occasionally in habitual heavy drinkers, and is known as delirium tremens.

Treatment.—The milder cases are treated by allowing the person to sleep off the effects. If excessive quantities of alcohol have been taken, the stomach is relieved of these by an emetic or by the stomach tube. In cases of delirium tremens a mixture of chloral (twenty grains) and potassium bromide (thirty grains) may be given, and repeated several times in the course of a day if not effectual at first. Sulphonal, trional, chloralamide are also used but are not so effective. If the patient be in a state of raging mania, hyoscine will quiet him, but it is so powerful a drug (the dose being one-hundredth of a grain) that it should not be used but by a medical man. The delirious person should not be held down, but, if very violent, may be fastened by a sheet or by wrists and ankles to the bed,

when he soon becomes tired and quiet.

ALCOHOLISM, CHRONIC.—This is the condition of mind and body produced by taking too much alcohol over long periods. Generally mental deterioration develops with a change towards bad temper and suspiciousness. Early senility is apt to appear, and the habitual drinker tends to enter upon his dotage soon after fifty years of age.

Bodily symptoms are produced as a result of tissue changes from the irritation of the alcohol. The mental changes noted above are the result of inflammation in the brain, followed by adhesions to its enveloping membrane, thickening of the arteries with lessened supply of blood to the brain, and consequent degeneration of the nerve cells. The nerves all over the body undergo chronic inflammation (*see NEURITIS*), producing paralysis of limbs, blindness, etc., which is especially the case in female drinkers. Catarrh of the stomach, causing dyspepsia and vomiting (*see DYSPEPSIA*), comes on early. Cirrhosis of the liver (*see LIVER, DISEASES OF*), with dropsy, is a very frequent complication. The body, with almost all the internal organs, becomes covered with fat, which interferes with all organic functions, and, in the case of the heart, may lead to sudden and premature death. The most serious changes occur owing to disease in the arteries throughout the body, of which alcohol is one of the chief causes. The fiery visage (*see ACNE ROSACEA*) and the bloodshot and bleary eye are also well-known signs. The body is rendered by alcoholic excess more liable to the ravages of other diseases, especially syphilis and tuberculosis, and chronic alcoholics succumb to serious acute diseases like pneumonia much more readily than do non-alcoholic persons.

Treatment.—The first thing to do is to give up alcohol entirely. For the person with a dipsomaniac craving

or vital organs damaged by excess there is no question of moderate drinking. The treatment of symptoms such as vomiting, dyspepsia, paralysis, is given under these heads. All sorts of drink-cures are advertised and sold; some contain drugs which tide the drinker over the depression caused by an attempt to shake off his habit; others, such as hypnotism, Christian science, religious revivals, active crusades against drunkenness in others, rouse up in unstable persons dormant powers of resistance; but, though a few veritable cures take place when the habit is once broken, in general, relapses occur, and, if drugs be injudiciously given, more pernicious drug habits (*see DRUG HABITS*) may be learned in addition. The idea that some drug may be given without the drunkard's knowledge, to cure him, is fallacious. The person must, as in the case of any bad habit, gradually and often painfully work out his own cure. To this end, retirement to some quiet place under friendly but strict supervision, or to an inebriates' retreat, is desirable for six months or a year.

ALIMENT (*see DIET*).

ALIMENTARY CANAL is the passage along which the food passes, in which it is digested (*see DIGESTION*), and from which it is absorbed by lymphatics and blood-vessels into the circulation. The canal consists of the mouth, pharynx or throat, œsophagus or gullet, stomach, small intestine, and large intestine, in this order. For details see articles under these heads. The total length of the alimentary canal is about 30 feet in a man.

ALKALI is a substance which neutralises an acid to form a salt, and turns litmus and other vegetable dyes blue. Alkalies are generally oxides or carbonates of metals.

ALKALOIDS are substances found in various plants possessed of very powerful action. They have certain general properties, as follows: they

ALOES

are related in composition to ammonia; they combine with acids to form crystalline salts, and in this form they are generally used for medicinal purposes; they are slightly soluble in water but readily dissolved by alcohol, which is therefore used in their extraction from the plants containing them. Most of them have a bitter taste and the majority are solid.

ALOES is the dried juice of plants which grow in the West Indies and East Africa. It acts as a purgative and forms a favourite 'dinner pill' for those who suffer from costiveness. (*See CONSTIPATION.*) Many people take an aloetic pill every day for thirty or forty years without harm, and taken in the evening it acts next morning. The dose is about two grains. Since it tends to cause griping it is usually combined with other drugs.

ALOIN is an extract from aloes much used in pills; the dose is about half a grain.

ALOPECIA is another name for baldness.

ALTERATIVES.—This term, which is vague and not much used now, means substances which, in some way, alter the composition of the tissues, so that the renewal of the tissues, which is always in progress, goes on more rapidly, and their functions are better discharged.

ALUM is the sulphate of aluminium and potassium. Ammonia alum is the sulphate of aluminium and ammonium. Alum is an astringent, and may be used in powder to rub into wounds, *e.g.* of the head, when bleeding will not stop of itself. As an emetic, a teaspoonful of powdered alum may be given in water. A valuable use is in an eye-wash for inflamed, painful, and bloodshot eyes, the strength being about 4 grains to the ounce of water. It is also used sometimes in about double that strength to form an astringent douche.

ALVEOLAR ABSCESS (*see GUM-BOIL*).

AMMONIA

ALVEOLUS is a term applied to the sockets of the teeth in the jaw-bone. The term is also applied to the minute divisions of glands and to the air sacs of the lungs.

AMAUROSIS means a deprivation of sight.

AMBLYOPIA means defective vision for which no recognisable cause exists in any part of the eye. It may be due to such causes as defective development, hysteria, excessive use of tobacco or alcohol, etc.

AMBULANCE is a vehicle for conveying stretchers upon which sick or wounded persons are laid for removal.

AMENORRHOEA is the absence of the menstrual flow during the time of life at which it should occur. (*See MENSTRUATION.*)

AMETROPIA means an error in the refractive power of the eye so that images are not properly focussed on the retina. It may occur as long-sightedness (hypermetropia), short-sightedness (myopia), or astigmatism, or as a combination of either of the first two with astigmatism. It is corrected by appropriate lenses.

AMMONIA is a pungent gas formed by heating a mixture of sal-ammoniae and quicklime. Dissolved in water it forms the well-known spirits of hartshorn, or liquor ammoniæ. It is given off slowly from carbonate of ammonia, which is used as smelling salts. Carbonate of ammonia is the chief ingredient in aromatic spirits of ammonia or sal volatile.

Externally strong ammonia produces blistering. For bee-stings, weak ammonia is applied locally to relieve the pain. Internally it is a powerful stimulant of the heart and respiration, and, therefore, a teaspoonful of sal volatile in water is given, or smelling salts are applied to the nose, when fainting threatens. Chloride of ammonia is used in liver disorders, and lozenges of this salt, or a little sal volatile, relieve an irritating barking cough and enable mucus to be coughed up.

AMPULE

AMPULE is a small glass container having one end drawn out into a point capable of being sealed so as to preserve its contents sterile. It is used for containing solutions for hypodermic injection.

AMPUTATION means the severing of any limb or part completely from the body. In the case of organs other than limbs the word 'excision' is generally used. An amputation through a joint without sawing of bone is called a 'disarticulation'.

AMYL NITRITE is a volatile, oily liquid which has the power of relieving spasms and dilating blood-vessels, and it acts with great rapidity, producing its effects in a few seconds. (See NITROGLYCERIN.)

AMYLUM is another name for starch.

ANÆMIA is a term used to cover the symptoms due to an impoverishment in quantity or quality of the corpuscles or fluid of the blood. The term is most commonly applied to changes in the red blood corpuscles, and may concern the number and form of the corpuscles or the amount of colouring matter (*hæmoglobin*) that they contain.

Anæmia may be the result of some other condition which causes loss of blood and is then called 'secondary' anæmia. In other cases the cause is very obscure, being a disease that operates in the blood itself as a result of which other organs are involved; or there may be a defect in the organs by which the blood is formed. Such cases are known as 'primary' anæmia. The chief varieties of primary anæmia are chlorosis and pernicious anæmia, while aplastic anæmia is a form related to the latter, and splenic anæmia is a less common variety.

SECONDARY ANÆMIA.—The most noteworthy sign is pallor of the skin and lips. If the condition is very acute there may be giddiness, faintness, a feeling of anxiety, and weakness of the pulse and fainting. In more chronic cases the appetite is

ANÆMIA

greatly impaired and the digestive power feeble, the heart's action is feeble and may be irregular, and very frequently there are dropsy about the ankles and general signs of neurasthenia.

Treatment is directed towards relieving the disease to which the anæmia is secondary, and iron tonics are specially administered.

CHLOROSIS, also known as **GREEN SICKNESS**, is a disease affecting especially young women from 14 to 25 years of age.

There appears in many cases to be a defective development of the heart, blood-vessels, and blood-forming organs; other cases are attributed to defective development of the ovaries and of their internal secretion.

Treatment.—The prevention of chlorosis in girls liable to the disease is effected by good food, sufficient exercise and the provision of sunlight and fresh air; rest and a holiday are of great importance when the disease is threatening to develop. When the changes in the blood have actually appeared, the patient should be treated in bed, and thus the strain on the heart and other organs is avoided. Rest in bed for two or three weeks may be necessary. Constipation must be carefully treated by some regularly administered aperient such as liquid extract of cascara or a daily aloin pill. Menstrual irregularity should be disregarded, as this is merely a symptom and stoppage of the menses is beneficial by preventing further loss of blood, while this function becomes natural as the anæmia lessens. The drug which has a specially beneficial action in this disease is some preparation of iron.

PERNICIOUS ANÆMIA, or **ADDISONIAN ANÆMIA**, is a severe form of bloodlessness occurring usually in middle life.

Pernicious anæmia comes on so gradually that its causes are difficult to determine. It appears to have increased greatly during recent years.

ANÆMIA

Men are more frequently affected than women, and the commonest age for its appearance is between 45 and 60.

Symptoms.—The onset is so very gradual that the illness may have lasted months before pallor, which gives the skin a lemon-yellow colour, added to languor and feebleness, calls attention to it. The muscles become flabby, and debility increases more and more. The pulse gets steadily weaker, swelling about the ankles appears, and small hæmorrhages may be seen under the skin. Owing to hæmorrhages into the retina, vision may become impaired. Indigestion, vomiting, and diarrhœa are common symptoms. Nervous symptoms of various kinds are present in a large number of cases, such as tingling or numbness in the feet and legs, sleeplessness and general neurasthenic signs. In the heart dilatation and feebleness of action still further incapacitate the patient for exertion. Some of the cases which begin acutely after great loss of blood recover under treatment. Other cases, in which no other complicating disease is present, may with a series of remissions and recurrences last for 5, 10, or 15 years, and cases are recorded in which life has been prolonged for 20 years or more.

Treatment.—It is very important to place a patient under healthy conditions with regard to proper food and especially rest. Sunshine and fresh air are also very important factors. At first the patient should be kept for some time in bed, as this both improves the digestion and relieves the heart from strain. The diet should generally be restricted to milk, farinaceous foods, fruits and vegetables, because meat cannot be digested by the feeble gastric juice. The administration of dilute hydrochloric acid and bitter tonics after meals often aids digestion greatly. The most commonly administered drug is arsenic, usually in the form of Fowler's solution; but, when the

ANÆSTHETICS

blood is so far improved that the corpuscles have risen almost to their normal numbers, the arsenic is replaced by one of the iron preparations. It might be supposed that the transfusion of blood from a healthy person would be beneficial. This is not invariably the case, but is worthy of trial in cases where a thoroughly healthy person, whose blood is found to be compatible with that of the patient, can be found to act as a 'donor' of blood. Feeding with an extract of liver or an extract of the pig's stomach, or the use of minced liver or kidney as an article of diet, has proved of the greatest value in many cases.

APLASTIC ANÆMIA is a disease in which the red blood corpuscles are very greatly reduced and in which no attempt appears to be made in the bone marrow towards their regeneration. The remedies found useful in pernicious anæmia do not appear to have much influence over the progress of this condition, and death usually occurs within one year of its discovery.

SPLENIC ANÆMIA, also known as **BANTI'S DISEASE**, is a condition in which the spleen becomes enlarged, and the liver cirrhotic, and in which jaundice and anæmia appear. The condition is a very chronic one, affecting young adults, and sometimes follows malaria. The application of X-rays or radium to the spleen causes its diminution in size and improvement of the anæmia. In cases strong enough to stand a severe operation, the removal of the spleen has been followed by a successful result.

ANÆSTHETICS are drugs and other measures which produce insensibility to external impressions.

Examples are ether, chloroform, nitrous oxide (laughing gas), chloride of ethyl, and combinations of these with oxygen.

Whatever be the anæsthetic employed, the effects are much the same,

ANALGESIA

though some symptoms are more prominent with one anæsthetic, others with another, and in the case of nitrous oxide the initial stages are hurried over and the patient plunged almost at once into deep unconsciousness.

Uses of anæsthetics.—The most evident use of anæsthetics is to relieve the pain of surgical operations and of convulsive diseases. Their use has made possible much more prolonged and delicate operations than could be performed upon the conscious and suffering body. An anæsthetic is also in many cases a great aid in diagnosis, particularly of abdominal conditions, producing muscular relaxation and allowing the free handling of painful regions. Anæsthetics are also used in medical practice to quiet violent spasmodic states, as in the uræmia of Bright's disease, in a succession of epileptic fits, or in lock-jaw.

ANALGESIA means loss of the power to feel pain without loss of consciousness, *e.g.* in some nervous diseases or due to some drugs.

ANASARCA is a condition of general dropsy.

ANATOMY is the science which deals with the structure of the bodies of men and animals. Brief descriptions of the anatomy of each important organ are given under the headings of the various organs.

ANEURYSM, or **ANEURISM**, means a dilatation upon an artery, due to yielding of the vessel-wall and gradual stretching by the pressure of the blood.

Symptoms.—These vary greatly with the size and position of the aneurysm, but there are some which are characteristic of all forms. The *type of person* who suffers is a man, in eight cases out of nine, about forty years of age, who has had an arduous or irregular life, or who has been fond of athletic exercises and high living. There may be other signs of arterial disease, such as chronic Bright's

ANEURYSM

disease (*see* BRIGHT'S DISEASE), or a previous apoplexy. If the aneurysm be in a limb, a round *swelling* is noticed, perhaps as large as a walnut or Mandarin orange, which expands and diminishes with each heart-beat, and this peculiarity is still more evident when the hand is laid on it. The swelling is generally painless, and the skin over it is unchanged (unlike an abscess). Aneurysms rarely occur farther from the trunk than elbow or knee. If the aneurysm be internal it is situated upon a great vessel, and is often very large in size before it causes any very marked symptoms, which are mainly due to interference with surrounding organs. *Pain* is felt only when the swelling presses upon the nerves, upon the air passages, causing great breathlessness, or upon bone, wearing it gradually away. In the latter case pain may be severe, although in early cases it is not infrequently taken for mere rheumatic pain. *Breathlessness* or *difficulty in swallowing* may occur where there is a large thoracic aneurysm, also *cough* and changes in the voice. In thoracic and abdominal aneurysm, though the swelling itself cannot be seen, there is a *bulging* in the upper part of chest or abdomen, as the case may be, which can be felt to throb when one hand is placed on it in front and the other on the back. Many other signs, such as inequality of the pupils, difference in the pulse on the two sides of the body, and murmurs heard over the swelling are present in different aneurysms, but can be appreciated only by the trained observer. Aneurysm is a serious disease, alike because it is apt to cause great interference with other organs; because it may at any time burst and cause sudden death from bleeding into the loose tissues or cavities of the body; and because it is a sign that the arteries are extensively diseased, and the person unfit for active work. The duration of life is generally only a few

ANGINA PECTORIS

years, though it may be prolonged for twenty if the aneurysm fills up with clot, which forms a natural method of cure.

Treatment.—Although the aneurysm tends constantly to increase, another tendency is for the blood in contact with the unhealthy wall to clot. If this be encouraged, the aneurysm may become a solid mass, which practically may be looked on as a cure, because there is no more tendency to grow or to burst. To this end the circulation must be quieted by rest in bed, freedom from business or worry, very spare diet without any stimulants, and depressant drugs like iodide of potash. Further, the tendency of the blood to clot is increased by taking salts of lime, and also by drinking as little fluid as possible, which has the other benefit of lessening the bulk and pressure of the blood.

ANGINA PECTORIS is a term applied to a violent paroxysm of painful sensations in the chest, arising for the most part in connection with some form of heart disease.

Symptoms.—An attack of angina pectoris usually comes on with a sudden seizure of pain, felt at first over the region of the heart, but radiating through the chest in various directions, and frequently extending down the left arm. A feeling of constriction and of suffocation accompanies the pain, although there is seldom actual difficulty in breathing. When the attack comes on, as it often does, in the course of some bodily exertion, the sufferer is at once brought to rest, and during the continuance of the paroxysm experiences the most intense agony. The countenance becomes pale, the surface of the body cold, the pulse feeble, and death appears to be imminent, when suddenly the attack subsides, and complete relief is obtained. The duration of a paroxysm rarely exceeds two or three minutes, but it may last for a longer period. The attacks

ANKLE

are apt to recur on slight exertion. Occasionally the first seizure proves fatal; but more commonly death takes place only after repeated attacks.

Treatment.—In the treatment of the paroxysm much relief is obtained by the inhalation of nitrite of amyl. Persons liable to suffer from attacks of angina should always carry with them the small glass 'perles' of nitrite of amyl, which are intended to be crushed in the hand and inhaled whenever needful. To prevent the recurrence of the attacks, something may be done by scrupulous attention to the state of the general health, and by the avoidance of mental or physical strain, for it is certain that attacks in those who are the subjects of the disorder are often precipitated by errors in living, and by undue exertion or excitement.

ANGITIS, or **ANGITIS** means inflammation of a vessel such as a blood-vessel, lymph-vessel, or bile-duct.

ANGUSTURA is a bitter tonic prepared from the bark of a South American tree. Infusion of angustura is given in doses of 1 to 2 ozs.

ANIMAL FOOD (see **DIET**, **MEAT**).

ANIMAL HEAT (see **TEMPERATURE**).

ANISE is the dried fruit of a Chinese plant, from which is obtained a volatile oil much used in the form of anise water and spirit of anise for a flavouring agent in some mixtures, and especially as a remedy for colic in children. (See **OILS**.)

ANKLE is the joint between the leg bones (tibia and fibula) above, and the astragalus below. It is a very strong joint with powerful ligaments binding the bones together at either side, many sinews running over it, and bony projections from the leg bones, which form large bosses on either side, called the outer and inner malleoli, extending about half an inch below the actual joint. It is therefore very seldom wounded or dislocated. Two common injuries

ANKYLOSIS

near the ankle are a sprain, on the inner side, consisting of tearing of the internal ligament; and fracture of the fibula (Pott's fracture) on the outer side. (*See also* JOINT DISEASES.)

ANKYLOSIS is a term meaning the condition of a joint in which the movements are restricted by fibrous bands, or by malformation, or by actual union of the bones. (*See* JOINT DISEASES.)

ANKYLOSTOMA is a parasitic worm. (*See* WORMS.)

ANODYNES are curative measures which soothe the pain.

ANOREXIA means loss of appetite.

ANTACIDS are medicines which correct acidity, either general or stomachic. (*See* DYSPEPSIA.)

ANTENATAL is a term applied to conditions occurring before birth. It is used with reference both to mother and child.

ANTHELMINTICS are substances which cause the death or expulsion of parasitic worms. (*See* WORMS.)

ANTHRACOSIS is the change which takes place in the lungs and bronchial glands of miners, and others, who inhale coal dust or smoke constantly. The affected tissues change in colour from greyish pink to jet black, owing to loading with minute carbon particles. This fine form of dust appears to be almost devoid of any harmful effect.

ANTHRAX is the name of a serious disease of sheep and cattle, known also as malignant pustule, wool-sorter's disease, splenic fever, or murrain. This is apt to be communicated to man from contact with animals or their skins, fleeces, etc. In an external form it produces a large inflamed pustule upon the hand or other part of cattle-tenders, which is treated by surgical means. An internal form produces a severe type of pneumonia among wool-sorters who have inhaled the spores of the disease from infected fleeces, and is generally fatal.

ANTIPYRINE

ANTIDIPHTherITIC SERUM (*see* SERUM).

ANTIDOTES are remedies which neutralise the effects of poisons either (a) by changing the poisons into harmless substances through chemical action, or (b) by setting up an action in the body the opposite of that caused by the poison. The important antidotes are mentioned in the article POISONS; see especially the table of treatment of common poisons.

ANTIFEBRIN (*see* ANTIPYRINE).

ANTI-KAMNIA is a remedy of antipyretic properties containing sodium, caffeine, and acetanilid. It is administered in doses of 4 to 10 grs.

ANTIMONY is the name applied to a metal and also to its sulphide, a black powder found in Nature. The tartrate of potassium and antimony is commonly known as 'tartar emetic' in reference to its chief property. The preparations of antimony are all irritants, hence in large doses they are poisons, producing vomiting, purging, and also paralysis of the heart and nervous system. In moderate amounts they stimulate secretions from the bronchial tubes, intestine, and skin, and thus ease cough, move the bowels, and cause free perspiration.

ANTIPERIODICS are drugs which tend to prevent the repetition of attacks of diseases occurring at stated periods. The term is used generally with reference to malaria.

ANTI-PHLOGISTICS is an old term meaning remedies used against inflammation, fever, and similar conditions.

ANTIPYRETICS are measures used to reduce temperature in fever.

Varieties.—Wet-pack, baths, alcohol, aconite, diaphoretic drugs, antipyrine, antifebrin, phenacetin, quinine, salicylate of soda, and purgative drugs.

ANTIPYRINE, or PHENAZONUM, is one of many drugs derived from coal-tar, which are of crystalline form, and possess the following properties:

ANTISCORBUTIC

they reduce temperature, dull pain, cause profuse perspiration, and act as tonics, all by their action upon the nervous system. Some have one of these properties to a special degree, others another, and so their uses vary slightly. The principal of these in addition to antipyrine are acetanilid or antifebrin, phenacetin, and exalgin.

The dose of antipyrine or of phenacetin is from 5 to 10 grs.; that of acetanilid or of exalgin is about 2 grs.

ANTISCORBUTIC is the term applied to foods and remedies which have the power of preventing or curing scurvy.

ANTISEPTICS are substances which have the property of preventing or arresting putrefaction in dead animal or vegetable matter.

Varieties.—By exclusion of the air or even by covering from germ-laden dust, dead matter that does not already contain bacteria may be kept intact for an indefinite time, as shown in the method of preserving meat by hermetically sealing the jars, after destruction of all germs by heat. Again, the preservative influence of a low temperature is well known. Furthermore, the abstraction of moisture will prevent corruption in dead material. In warm and dry climates, animal food may be preserved by exposure to the sun. The action of direct sunlight is highly destructive to bacteria, having more effect upon some kinds than upon others. All these agencies are detrimental to the growth of bacteria.

HEAT is one of the most effective antiseptics, and may be applied at a temperature of 100° (boiling water) to 150° Centigrade.

CHEMICAL ANTISEPTICS include boracic acid (1 in 30 of water), carbolic acid (1 in 40), perchloride of mercury (1 in 2000), cresol (1 in 200), hydrogen peroxide, tincture of iodine, chlorine water, formaldehyde, potassium permanganate (1 in 1000), acriflavine (1 in 1000), eusol, alcohol, ether, nitrate of silver (1 in 500).

APERIENTS

For the manner in which antiseptics are used see under DISINFECTANTS, and also WOUNDS.

ANTISPASMODICS are remedies which diminish spasm.

Varieties.—Essential vegetable oils, such as oil of lavender, of peppermint, of cloves, and also valerian and camphor, diminish the sensitiveness of the nerve endings and so check irritable spasm of the heart and bowels.

ANTITOXINS are substances formed in the body, which neutralise the poisons produced by bacteria. (See SERUM.)

ANTRUM means a natural hollow in a bone. *Antrum of Highmore* is situated in the upper jawbone between the eye and mouth and to the side of the nose, its dimensions being about one inch each way. It communicates by a small opening with the nose. The *mastoid antrum* is situated in the mastoid process, the mass of bone felt behind the ear, and is much smaller. The latter is very apt to become the seat of an abscess in cases of suppuration of the middle ear. (See EAR, DISEASES OF.)

ANURIA is a condition in which no urine, or very little, is voided for some time. (See BRIGHT'S DISEASE, URINE.)

ANUS is the opening at the lower end of the bowel. It is kept closed by two muscles, the external and internal sphincters.

ANUS, DISEASES OF (see RECTUM, DISEASES OF).

AORTA is the large vessel which opens out of the left ventricle of the heart and carries blood to all the body.

The chief diseases of the aorta are atheroma and aneurysm. (See ANEURYSM.)

AORTITIS means a degenerative condition of the lining of the aorta. It is especially produced by syphilis.

APERIENTS are medicines which produce a natural movement of the bowels. (See CONSTIPATION and PURGATIVES.)

APEX

APEX is the pointed portion of any organ which has a conical shape. The apex of each lung reaches about one and a half or two inches into the neck. (*See CONSUMPTION.*) The apex of the heart should be found beneath the fifth rib, a fraction of an inch inside the nipple. It is displaced in some diseases. (*See HEART DISEASE.*)

APHASIA means a loss of the power of speech, due to injury to the centres which govern this act in the brain. The higher of these centres, which have to do with forming the ideas of speech, putting words together in sentences, and governing the movements of mouth, tongue, and larynx, lie on the surface of the cerebral hemispheres, especially of the left; while the lower centres, which directly bring the muscles of the voice organs into action, under superintendence of the higher ones, are in the medulla or hind brain.

APHONIA means loss of voice. It is caused by some disorder in the throat or in the nerves proceeding to the throat muscles.

APOMORPHINE is a crystalline alkaloid closely related to morphine and having a powerful emetic action.

APONEUROSIS is the term applied to a white fibrous membrane which serves as an investment for the muscles and which covers the skull beneath the scalp.

APOPLEXY is a term meaning a stroke of sudden insensibility or of bodily disablement connected with some diseased condition of the brain.

The most important cause is progressive disease of the kidneys with changes in the heart and blood-vessels and raised blood-pressure. With respect to the exciting causes of a stroke of apoplexy, it may be stated generally that whatever tends directly or indirectly to increase the tension within the cerebral blood-vessels may bring on an attack. Hence, such causes as immoderate eating or drinking, severe exertion of

APOPLEXY

body or mind, violent emotions, much stooping, overheated rooms, exposure of the head to the sun, sudden shocks to the body, and the sudden suppression of evacuations, such as the menstrual discharge, may precipitate the attack. Many cases in elderly people occur while some violent exertion is being made, such as hurrying to catch a train or during straining at stool.

Symptoms. — Apoplectic attacks vary both as regards their intensity, the particular symptoms shown, and the after effects, but well-marked cases present the following symptoms. The person attacked becomes, more or less suddenly, deprived of consciousness and all power of voluntary motion. He lies as if in a deep sleep, with a flushed face, a slow pulse, stertorous breathing, accompanied with puffing of the cheeks during expiration, and with the pupils of the eyes insensible to light, and contracted or unequal. This state in many respects resembles the coma of narcotic poisoning, and is unfortunately too often mistaken by unskilled persons for alcoholic intoxication. The symptoms and history of the case, however, are usually sufficient to enable a medical man to form a correct diagnosis.

The presence of complete paralysis down one or other side is a point which in general differentiates apoplexy from narcotic poisoning and alcoholic intoxication, the paralysis being observable even during unconsciousness by lifting the limbs and noting the peculiar suddenness and helplessness with which they fall when not supported. The fact that in either of the last-named conditions the person can generally be partially roused, while in apoplexy unconsciousness is complete, is also valuable. Assistance is also gained by observing the state of the pupils, which, in narcotic poisoning, are usually much contracted, while in alcoholic intoxication they are widely dilated.

APOPLEXY

In this condition of insensibility death may occur within a few hours, or there may be a gradual return to consciousness, in which case it is usually found that the result of the attack remains in the form of paralysis of one side of the body.

An attack of apoplexy may occur without unconsciousness, a sudden paralysis of one side of the body being the only manifestation. Occasionally, when the hæmorrhage takes place gently, the symptoms are gradually developed over a period of several hours.

The effects of a stroke of apoplexy, as regards the paralysis which remains after the immediate attack is over, are described under *Hemiplegia* in the article on PARALYSIS. The dangerous period of an apoplectic attack is during the first two or three days and especially during the first twenty-four hours, when the hæmorrhage in the brain may be increased or even started again after it has ceased by injudicious disturbance of the patient, such as may be caused by his removal to a distance. A certain amount of danger remains for a period of three weeks or thereabout while the process of absorption and organisation of the blood clot is taking place. During this period also such improvement in the patient's condition of paralysis, etc., as will take place reaches almost its full extent.

Treatment.—A knowledge of these facts is of the utmost importance in the treatment of apoplexy, as obviously much can be done in the way of warding off a stroke when it appears to threaten, and of preventing a recurrence in cases where there have been previous attacks. With respect, further, to the treatment of apoplexy, it must be admitted that little can be done during the state of unconsciousness, though the great importance of absolute quiet, with the body in the recumbent position, and the head supported on a low

APPENDICITIS

pillow, cannot be too strongly impressed. Care must be taken that the patient receive nothing of a stimulant nature, which would tend to raise the general blood-pressure and increase the hæmorrhage in the brain.

APPENDICITIS is the name of an inflammatory disease starting in the appendix vermiformis, which is a narrow tube leading out of the large intestine and placed in the right lower corner of the abdomen.

In some cases the slightly inflamed appendix undergoes at times spasmodic, painful contractions, the so-called *appendicular colic*. This may be associated with the presence of concretions in the interior of the appendix or with adhesions between it and neighbouring parts. In other cases the inflammatory process is so mild that no symptoms directly referable to the appendix ever occur, but the patient suffers from constipation, indigestion, or general abdominal discomfort produced in a nervous reflex manner by the disturbance of the appendix. This corresponds probably to a chronically inflamed appendix, of which the peritoneal covering has not yet become affected, or to an attack of peritonitis round the appendix from which recovery has taken place, but which has left adhesions behind, or to a small chronic abscess which has resulted from a past attack. The *acute form* is that which is usually known as an 'attack of appendicitis', and, though in ordinary cases it is a localised inflammation of the peritoneum, which tends to get better in a fortnight or thereabout, it may proceed to two very serious forms. *Gangrenous appendicitis* is one in which the inflammation is so intense that the appendix sloughs away, and the bowels communicate, through the opening, with the peritoneal cavity. The other form is *suppurative appendicitis*, in which the inflammation is not quite so severe but the appendix

APPENDICITIS

becomes the centre of an abscess. Both of these latter forms are extremely dangerous to life and are often very sudden in their development.

Symptoms.—An attack of appendicitis comes on as a rule suddenly, without the early feelings of languor and malaise common to most acute diseases. The principal symptoms are four in number: (a) sudden pain in the abdomen, often vague in situation at first, but usually settling, in a day or two, in the right iliac region. It is generally very severe, and the patient has to lie constantly on his back with the right leg drawn up. (b) Disturbance of the digestive functions, consisting in loss of appetite, nausea, often vomiting, and constipation, which has usually been present for a day or two. (c) Tenderness to touch in the right iliac region, which in very many cases has its point of greatest intensity defined with curious exactitude. (d) Fever of a moderate amount, generally about 102° . The first three of these occur with varying intensity in other diseases of the abdomen, in which, however, fever is uncommon. Besides these, distinct resistance and hardness of the muscles in the right lower quarter of the abdomen can be made out on pressure, and swelling is usually visible in the right iliac region after two or three days. In an ordinary case these symptoms last for a week or so and then gradually decrease, leaving the person fairly well at the end of a fortnight. In *gangrenous appendicitis* the symptoms are extreme, the fever high, and death may come on with startling rapidity, if an operation be not performed. In *suppurative appendicitis* an abscess forms with marked swelling, though rarely before the end of the first week, and this also calls for operation.

In some cases an attack is very slight, the bowels around become matted together, an abscess collects in the cavity so formed, and only

ARGYLL ROBERTSON PUPIL

when it comes near the surface is the condition diagnosed.

Treatment.—The treatment of an ordinary case is fairly simple, and consists of remedies to allay vomiting, if present, light diet, mainly of milk, and poultices to the iliac region in order to relieve pain, or the use of an ice-bag, if ice can be obtained. In general no purgatives should be given, for sometimes their use produces very serious results. If, however, the case is one of gangrenous appendicitis or of abscess formation, immediate operation is the only proper course; for the great danger of the disease consists in the production of a general peritonitis through the escape of bacteria and putrescent material in large amount from the interior of the appendix. (See PERITONITIS.)

If a person has had two attacks, and especially if he is likely to reside at times in places where facilities for immediate operation are not very good, the operation should be performed at a time when conditions are most favourable.

APPETITE is an instinctive craving for the food necessary to maintain the body and to supply it with sufficient energy to carry on its functions. The ultimate cause of appetite is a question of supply and demand in the muscles and various organs, but the proximate cause is doubtful. Some have attributed the cause of thirst to dryness of the nerve endings in the skin and mouth, as water evaporates from the surfaces, and the cause of hunger to slight irritation of the stomach caused by oozing into the organ of the gastric juice manufactured in its walls. But the question must be much more complex. Undoubtedly a good appetite is necessary to good digestion, and a perfectly healthy taste and appetite ought to be both a guide to the suitability of foods and a gauge of the amount required. (See TONICS.)

ARGYLL ROBERTSON PUPIL is a

ARM

condition (described originally by Dr. Argyll Robertson) in which the pupils contract when the eyes converge on a near object, but fail to contract when a bright light falls on the eye. It is found in several diseases, especially in locomotor ataxia and general paralysis.

ARM is the part of the upper limb between the shoulder and elbow, but is generally taken to include also the forearm and shoulder regions. The upper limb is attached to the body by the strong pectoral muscles in front and by several powerful muscles springing from the spine and ribs behind. The great mobility of the shoulder is largely due to the fact that the only contact with the bones of the trunk takes place between the collar-bone and the upper end of the sternum or breast-bone, the shoulder-blade sliding about freely between the muscles of the back as the arm is raised and lowered. The bones of the arm are the clavicle or collar-bone and the scapula or shoulder-blade lying at the upper part of the chest, the humerus, a single bone in the upper arm, and the radius and ulna lying side by side in the forearm. Eight small bones compose the wrist and connect the hand with the lower end of the radius. The radial artery can be felt pulsating near the wrist and is generally known as the 'pulse'. The ulnar artery lies to the inner side of the forearm, deeply imbedded in muscles. A large group of nerves lies at the inner side of the armpit, and these nerves run downwards to supply the muscles and skin of the arm.

ARNICA is a plant of the Western United States and Europe. The tincture of arnica, made by steeping the root in rectified spirit, is the preparation most employed, and is very extensively used as a domestic remedy. Externally the tincture is used as a lotion for application to sprains and bruises, which it relieves by virtue of its weakly irritant action. It is seldom used internally, though

ARSENIC

sometimes it is given to stimulate digestion.

AROMATICS form a group of chemical substances including most of the essential oils of plants, *e.g.* anise, cloves, turpentine, camphor, thymol (hence the name, as these have all an aroma), and also benzene (derived from coal-tar) and its derivatives, such as phenol or carbolic acid, aniline, etc. These substances are almost all strongly antiseptic.

ARRHYTHMIA, or **ARRHYTHMIA**, means any variation from the normal regular rhythm of the heart-beat.

ARROWROOT is a white powder, consisting of almost pure starch, derived from the root of a West Indian plant. It is much used as an invalid food, because the particular form of the starch renders it very easy of digestion, but it must of course be combined with other forms of nourishment.

ARSENIC is a metal, but is better known by its oxide, white arsenic, by two arsenites of copper, Scheele's green and emerald green, and by two sulphides of arsenic: orpiment, or king's yellow, and realgar. It is very extensively used in dyeworks, in the manufacture of chemicals, in making enamel, in hardening shot and type, in fly-papers, sheep-dips, yellow and green paints, and is further given to horses to improve their coat, and much used in medicine. Applied pure, it is a strong germicide and caustic, and in large doses is a powerful irritant to stomach and intestines. In small doses continued for some time, it has the effect of modifying the changes which take place in the tissues and leading to the deposition of fat. When taken over long periods, larger and larger doses can be tolerated, till at last a quantity, many times the poisonous dose, has no ill effect.

Externally it has been used in 'cancer cures', generally made up into the form of a paste. In small doses, for a short period, it stimulates

ARSENO-BENZOL

the stomach functions and so improves digestion. Taken over longer periods, it is used in chronic skin diseases, in various nervous diseases, in pernicious anæmia, in which it stimulates the blood-forming organs, in asthma, and in chronic malaria, and is a very powerful remedy.

For the treatment of poisoning by arsenic see the table of treatment of common poisons given under POISONS.

ARSENO-BENZOL is the general name applied to a series of organic compounds of arsenic, better known by the proprietary name of one of these compounds, salvarsan.

ARTERIES are vessels which convey blood away from the heart to the tissues of the body, limbs, and internal organs. In the case of most arteries, the blood has been purified by passing through the lungs, and is consequently bright red in colour.

ARTERIES, DISEASES OF.—Although these tubes are subject, like the muscles, to a great amount of strain and wear, they are, like the muscles, singularly free from diseases. One of the most important diseases is aneurysm. (See ANEURYSM.)

Arterio-sclerosis, which is a condition of thickening and rigidity affecting particularly the middle coat of arteries, comes on as a natural change in old age, but in some persons the change tends to come on early in life, possibly as a hereditary defect, while certain diseases, of which the chief are gout, syphilis, alcoholism, and lead-poisoning, bring it on in middle life. The results are general debility, with wasting of the muscles, failure of appetite, tendency to faints and fits, headaches, coldness of hands and feet, with a great liability to gangrene, and, most important of all, an early failure of mental power due to thickening and blocking of the arteries in the brain.

ARTERITIS means inflammation of an artery.

ARTHRITIS means inflammation of a joint or joints. The chief forms

ASPHYXIA

are rheumatic, gouty, rheumatoid, gonorrhœal, tuberculous, and traumatic. (See JOINTS, DISEASES of, and RHEUMATISM.)

ARTICULAR means anything connected with a joint, *e.g.* articular rheumatism.

ARTICULATION is a term employed in two senses in medicine, either meaning the enunciation of words and sentences or meaning a joint.

ARTIFICIAL RESPIRATION (see DROWNING, RECOVERY FROM).

ASAFETIDA is a gum resin of unpleasant odour, used as an expectorant to increase the secretion of mucus in the air-passages, as an anti-spasmodic in colic with flatulence, and especially in hysterical pains and cramps, which it subdues.

ASCARIS is the name of a round worm, sometimes nearly a foot in length, which is parasitic in the human intestine and that of the horse, and very much resembles a large earth-worm. (See WORMS.)

ASCITES means dropsical swelling of the abdomen. (See DROPSY.)

ASEPSIS is a term, used in distinction from 'antiseptis', to mean that principle in surgery by which, instead of strong germicides like corrosive sublimate or carbolic acid being applied to wounds, the latter are washed with water which has been rendered sterile by boiling, and all the dressings, sponges, and instruments used are simply purified by steaming, boiling, or dry heat.

ASPHYXIA means literally absence of pulse, but is the name given to the whole series of symptoms which follow stoppage of breathing and of the heart's action from any cause.

The most frequent cause of asphyxia is drowning. Blockage of the air-passages by disease or by choking on a foreign body and breathing in a poisonous or irrespirable gas, like black-damp, are less common causes. In all such cases the lungs are deprived of oxygen so that the blood

ASPIDIUM

rapidly becomes impure, and the heart gradually fails.

Treatment.—So long as the heart continues to beat, recovery may be looked for under prompt treatment. The one essential of treatment is to get the impure blood aerated by artificial respiration. Besides this, the feeble circulation can be helped by various methods. (*See under DROWNING, RECOVERY FROM.*) When the heart is very feeble or even stopped, the face extremely blue, and the veins of the neck and arms swollen, the person's life may possibly be saved by opening a vein in the arm, and so allowing the blood to escape and the heart to contract again.

ASPIDIUM is the name of the shield-ferns used as a remedy for tapeworm. (*See FERN-ROOT.*)

ASPIRATION means the withdrawal of fluid from the natural cavities of the body or from cavities produced by disease. It may be performed either for curative purposes, or, very often, a small amount is drawn off with a hypodermic syringe for diagnosis of the nature or origin of the fluid.

ASPIRIN, or ACETYL-SALICYLIC ACID, is a white crystalline powder which is used like sodium salicylate as a remedy for rheumatism, pleurisy, chorea, etc., also to reduce fever in infectious diseases. It has some action in relieving pain and producing sleep, and is therefore frequently used for headache and slighter degrees of insomnia. The dose is 5 to 15 grains.

ASSIMILATION (*see* DIGESTION).

ASTHENOPIA means a sense of weakness in the eyes, coming on when they are used. As a rule it is due to long-sightedness, slight inflammation, or weakness of the muscles that move the eyes.

ASTHMA is a disorder of respiration characterised by severe paroxysms of difficult breathing, usually followed by a period of complete relief, with recurrence of the attacks at more or less frequent intervals.

ASTHMA

Asthma is very frequently associated with some form of chest complaint, particularly bronchitis, and hence the term *bronchitic asthma*. When the bronchitis is cured, the asthma disappears.

Closely allied to the last type of asthma is the group of cases associated with hay fever, in which the mucous membrane of the nose and respiratory passages swells up and the bronchial muscles are spasmodically contracted under the influence of various substances, to which the persons affected are particularly sensitive. Such substances include in different persons the pollens of various grasses and flowers, the emanations from horses, cats, and various birds when these substances are inhaled. Other persons show similar sensitiveness to certain foods, which may include peas, lentils, oats, fruits, nuts, and particularly some animal substances, such as the meat of certain animals, milk, eggs, oysters, and different shellfish. In still other persons sensitiveness is shown to the products of indigestion at times, although, when the digestive organs are working well, the persons affected may be able to take the same foods which at times are responsible for asthmatic attacks.

Asthmatic-like paroxysms are also of occasional occurrence in some forms of heart disease, and the term *cardiac asthma* is used to describe such cases.

In persons who are the subject of chronic Bright's disease, attacks of asthmatic nature may also occur, the condition being then known as *renal asthma*.

Asthma is much more common in men than in women. It may be developed at any age, but is most frequently observed in early and middle life. A large number of cases originate in diseases affecting the respiratory system during infancy, such as whooping-cough, measles, and bronchitis. Asthma is often hereditary,

and in all cases one attack appears to predispose to others.

Symptoms.—The onset of an attack of asthma is usually sudden, although there may exist certain symptoms which warn the sufferer of its approach, such as a feeling of discomfort, drowsiness, irritability, and depression of spirits. The period when the asthmatic paroxysm comes on is generally during the night, or rather in the early hours of morning. The patient then awakes in a state of great anxiety and alarm, with a sense of weight and tightness across the chest, which he feels himself unable to expand with freedom. Respiration is performed with great difficulty, and is accompanied by wheezing noises. His distress rapidly increases, and he can no longer remain lying down, but gets up, and sits or stands with his shoulders raised, his head thrown back, and his whole body heaving with his desperate efforts to breathe. His countenance is pale or livid, and wet with perspiration, while his extremities are cold; his pulse is rapid and weak, and frequently irregular. All his clothing must be loose about him; he cannot bear to be touched, and the very presence of others around him seems to aggravate his distress. His one desire is to breathe fresh air; and he will place himself by an open window and sit for hours in the middle of the night, unmindful of the exposure. The paroxysm, after continuing for a variable length of time, often extending over many hours, begins to abate, the breathing becomes easier, and by the next day the patient may be comparatively well. In cases, however, of long-standing, the subject of asthma comes to bear permanent evidence of its effects. He is easily put out of breath on exertion, and he requires to lie with his head elevated, circumstances to be ascribed to organic changes in the chest, which oft-recurring attacks of asthma are liable to induce. (*See EMPHYSEMA.*)

Treatment.—The treatment of asthma consists in the employment of remedies to allay the paroxysms, and in the adoption of measures likely to prevent their recurrence. During the attack the patient should be placed in as favourable circumstances for breathing as practicable. He usually selects the position easiest for himself. Abundance of air should be admitted to the apartment, and he should be interfered with as little as possible. The remedial agents employed with the view of relieving the paroxysms are very numerous, and only a few of the more important of them can be mentioned. Much value is attached by many to the smoking of stramonium, and even tobacco smoking appears in some instances to give relief. The fumes of nitre-paper (blotting-paper prepared by being dipped in a saturated solution of nitre and dried) burnt in the apartment often succeed in giving ease. Glass capsules containing nitrite of amyl, which are crushed and held beneath the nostrils, sometimes give considerable relief in bad cases; so too does paraldehyde in teaspoonful doses, or the tincture of *lobelia inflata*. Adrenalin either inhaled from a spray or injected beneath the skin sometimes gives immediate relief in a paroxysm. Ephedrine acts in the same way. None of these remedies, however, ought to be tried without medical advice. An emetic is often useful when the attack is due to some error in diet. Coffee is a popular and useful remedy, but, to do good, the infusion must be very strong, and taken upon an empty stomach. Dry cupping of the back, and placing of the hands in very hot water contained in basins placed at the side of the bed, are other household remedies often followed by considerable relief.

To prevent the recurrence of the paroxysms special care must be taken by the sufferer to avoid those influences, whether connected with

ASTIGMATISM

locality or mode of life, which his experience may have proved to have been the occasion of former attacks. Particularly must care be taken to avoid exposure to the weather and other influences apt to bring on bronchitis and to abstain from articles of diet which have previously caused attacks.

ASTIGMATISM is an error of refraction in the eye due to the cornea (the clear membrane in front of the eye) being unequally curved in different directions, so that rays of light in different meridians cannot be brought to a focus together on the retina. The curvature, instead of being globular, is egg-shaped, longer in one axis than the other. The condition causes objects to seem distorted and out of place, a ball for instance looking like an egg, a circle like an ellipse. The condition is remedied by suitable spectacles of which one surface forms part of a cylinder. (See SPECTACLES.)

ASTRAGALUS is the name applied to the somewhat square-shaped bone which forms the lower part of the ankle-joint and unites the leg bones to the foot.

ASTRINGENTS are substances which cause contraction of mucous surfaces, blood-vessels, or tissues, or which stop secretions and check discharges.

Perchloride of iron, tannic and gallic acids, witch hazel, and suprarenal gland extract are much used to control bleeding from the throat, from wounds, etc., or to diminish congestion. Alum and sulphate of zinc are used as astringent eye-washes. In diarrhœa, sulphate of copper, tannic acid, and lime-water are among the chief remedies. For piles, acetate of lead is a useful astringent. For details as to the methods of use see under the headings of the substances mentioned.

ATAXIA means loss of power of governing movements, though the power necessary to make the movements is still present. Thus an ataxic

ATROPINE

person may have a good grip in each hand but be unable to do any fine movements with the fingers, or, if the ataxia be in the legs, he throws these about a great deal in walking, though he can lift the legs and take steps quite well. This is due to a defect of sensation. (See LOCOMOTOR ATAXIA.)

ATHEROMA is a degenerative change with thickening in the inner and middle coats of arteries.

ATONY means want of tone or vigour in muscles and other organs. (See TONICS.)

ATOPHAN is a yellowish powder which is used in the treatment of gout and rheumatic conditions.

ATRIUM is another name for an auricle of the heart. The term is also applied to the drum of the ear.

ATROPHY is a term in medicine used to describe a state of wasting due to some interference with the function of healthy nutrition.

ATROPINE is the active principle of belladonna, the juice of the deadly nightshade. It is very extensively used in the treatment of eye diseases.

Externally, an ointment of atropine or extract or liniment of belladonna is much used in neuralgia, and other painful conditions. Plaster of belladonna is very useful in muscular rheumatism. (See PLASTERS.) To the breasts, a plaster or extract of belladonna is applied to stop the milk formation in threatened abscess. In eye troubles atropine drops are used to dilate the pupil for more thorough examination of the interior of the eye, or to draw the iris away from wounds and ulcers on the centre of the eye; they also soothe the pain due to light falling on an inflamed eye; and are further used to paralyse the ciliary muscle and so prevent accommodative changes in the lens of the eye while the person is being tested for spectacles. As this drug checks sweating, it has a most important use in the excessive night sweats of consumption, being given usually in pills. It is much employed in cough-

AUDITORY NERVE

mixtures for bronchitis and whooping-cough to dry up the mucus and check spasmodic coughing. In renal colic, gall-stone colic, and other agonising spasmodic conditions, atropine is given along with morphia by hypodermic injection. It has been used as an antidote in opium poisoning, and is the antidote to muscarine, the poisonous principle of some toad-stools.

AUDITORY NERVE, or **NERVE OF HEARING**, is the eighth of the cranial nerves.

AURA is a peculiar feeling which persons subject to epileptic or hysterical seizures have just before the onset of an attack.

AURAL DISEASES (*see* **EAR, DISEASES OF**).

AURICLE is a term applied both to the pinna or flap of the ear and also to the chamber at either side of the base of the heart.

AUTOGENOUS means self-generated, and is the term applied to products which arise within the body. It is applied especially to bacterial vaccines manufactured from the organisms found in discharges from the body and used for the treatment of the person from whom the bacteria were derived.

AUTO-INTOXICATION means literally self-poisoning, and is any condition of poisoning brought about by substances formed in or by the body. In certain persons substances are formed during digestion of various foods which produce great irritation; and in those subject to habitual constipation a state of ill-health is caused by substances formed, either by digestion or by bacterial growth in the

AZOTEMIA

bowels, and absorbed into the general system.

AUTOMATISM means the performance of acts without conscious will, as, for example, after an attack of epilepsy or concussion of the brain. In such conditions the person may perform acts of which he is neither conscious at the time nor has any memory afterwards. The condition is of considerable importance from a legal point of view, because acts done in this state, and for which the person committing them is not responsible, may be of a criminal nature.

AUTONOMIC is the term applied to a part of the nervous system regulating the functions of some of the internal organs independently of the will power.

AUTO-SUGGESTION is the term applied to a peculiar mental state, which sometimes occurs after accidents, in which the will and judgment are partially perverted, so that slight or temporary injuries are greatly exaggerated in the imagination, and the person believes himself to be affected by some serious disability. Examples of this are found in paralysed and insensative limbs following some minor bruise, for example in a railway accident, and the blindness, deafness, or inability to speak which sometimes followed concussion in soldiers, especially when the injury was received in the dark. This state is also called 'traumatic suggestion'.

AXILLA is the anatomical name for the armpit.

AZOTEMIA means the presence of urea and other nitrogenous bodies in greater concentration than normal in the blood. The condition is generally associated with advanced types of kidney disease.

B

BABIES, CARE OF.—The first care of the newly-born child consists in making sure that the umbilical cord is securely tied (*see* LABOUR), and in wrapping the child in a blanket or square of flannel. After the mother's safety and comfort have received attention, the baby may, at the convenience of the nurse, receive a bath with water at a temperature of 100° Fahr., the skin being gently rubbed with a soft sponge and soap. Greasy or encrusted areas may be softened with vaseline or other simple ointment. After drying, the skin is powdered, especial attention being given to the natural folds and to the remains of the umbilical cord, which is wrapped in a small square of lint. The child is then dressed with a binder, napkins, and the usual long clothing.

Clothing.—The general principles governing clothing of a young child are that the garments should be warm, soft, and light, and that they should be so loose that they do not exert undue pressure on any part of the body, and that they can be quickly put off and on. The small body of an infant is very easily chilled, and its heat-producing powers are feebler than those of grown persons. Attempts should therefore not be made at too early an age towards 'hardening' a child by exposure. Bare arms and legs are unsuitable in babies and young children, and are very liable to lead to catarrh of the respiratory and digestive organs. The baby's skin is very soft, tender, and easily chafed, and his movements are feeble as compared with those of older children and readily hampered by the restraint of tight clothing. Any tight bands are therefore prejudicial to growth and development. Prolonged dressing and undressing is both tiring to an infant and is liable to result in chill, so that fastenings should be as simple as possible, and should consist of tapes rather than buttons or hooks.

Woollen garments are in general the most suitable for babies and young children; these should be of loose texture as found in knitted clothing. An exception to this, however, is the napkins which babies have to wear until they gain control over the movements of the bladder and bowels. These garments are made of linen or cotton, because they have to be frequently changed and washed. A mackintosh should not be worn over the napkin, except in special circumstances such as on a journey, because this is unhealthy and liable to cause irritation of the skin. When, however, the child is subject to diarrhoea, it is well to place a pad of absorbent cotton-wool inside the napkin; this absorbs moisture and helps to prevent irritation of the skin. It is customary to dispense with the use of a binder when the child is about a month old, and to shorten the long clothes at about three or four months of age, depending upon the season.

With regard to bed-clothes, these should be light in weight, but the young child requires somewhat warmer coverings than the adult because of the rapidity with which the child's body loses heat.

Washing and Bathing.—The baby should have one bath every day, and if he is strong he may have two, but harm is sometimes done to delicate children by too much bathing, and in such cases the second bath may be replaced by sponging. The temperature of the bath should be about 95° Fahr. at first, but as the baby grows older, the bath, especially in warm weather, may be reduced to 85° or 80°. Very little soap is required, and the soap should be of the superfatted type if there is any tendency to irritation of the skin. Care should be taken that the baby is not left unclothed for any length of time, and after drying, some simple starch and talc dusting powder or Fuller's earth

BABIES, CARE OF

is applied to the natural folds. If there is any tendency to chafing here, zinc ointment or cold cream may be applied before the powder.

Nothing should ever be introduced into a baby's ear, as the drum is very easily damaged. Wax should be allowed to work its way to the surface, from which it is simply wiped off by the finger covered with a handkerchief.

By the time the child is able to stand, the bath may be finished by a cold douche; this is given, while the child stands in the warm bath, by pouring cold water from a sponge or from a jug over his shoulders; he should be quickly dried, vigorously rubbed with a rough towel, and immediately afterwards reclothed. This cold douching is a useful stimulant to the nervous system, improves the circulation, tends to do away with cold feet, and benefits the appetite.

Sea bathing is seldom good for children before the age of six or eight years, and such a bath should not be taken immediately after a meal nor when the child is feeling chilly or is perspiring.

Care of the Hair and Teeth.—The hair should be kept clean, and while the hair is short the head should be washed every day. If too much soap is used, however, the hair and scalp are apt to become dry. If scurf gathers on the scalp, it may be removed by washing with soap and water, or by occasionally using spirit of soap. No comb should be used for a baby's hair, as this is apt to damage the scalp, and the brush employed should be soft. In older children with longer hair, washing of the scalp once a week is sufficient.

As soon as the teeth appear, the use of a soft tooth-brush should be commenced. The tooth powder used should be one containing chalk, and the teeth should be brushed not only crosswise but also up and down in order to dislodge any material that may collect between them.

BABIES, CARE OF

Feeding.—The proper food for babies and young children is given under **INFANT-FEEDING**.

Exercise.—Fresh air and sunshine are particularly important for babies and young children. The room in which they spend most of the day should have a southern exposure, be well ventilated and kept at a temperature between 60° and 65° Fahr. One window, at least, should be constantly open for some inches at the top, or provided with a ventilating board (*see VENTILATION*). Injudicious protection from fresh air and the keeping of a close atmosphere is very apt to bring on catarrh of the respiratory system, and is especially dangerous after children have suffered from such diseases as measles and whooping-cough.

With regard to going out-of-doors, a baby should be taken out every fine day, summer and winter, beginning about a fortnight after birth in summer and a month after birth in the colder part of the year. At first, exercise in the open air may last for fifteen or twenty minutes at a time, but, after the child becomes accustomed to the open air, he can hardly be too much out-of-doors when the weather is bright and dry. It should be remembered that very young children are particularly liable to be chilled by wind, and they should therefore be carefully protected in such weather. Children who have any tendency to eczema are also liable to be affected in this way by cold wind.

Training and Development.—It is very important from the beginning to establish regularity in regard to feeding, and as soon as the child obtains control over its bowels, to institute regularity in this matter also. Bad habits in young children should be observed and corrected as early as possible, and some of these are mentioned under **CHILDREN, PECULIARITIES OF**. The best method of estimating a baby's progress is by weighing the

BABIES, FEEDING OF

child regularly, say once a week. The rate at which children increase in size is mentioned under **WEIGHT AND HEIGHT**.

BABIES, FEEDING OF. (See **INFANT-FEEDING**.)

BACILLI are micro-organisms, which are rod-like in form.

BACKACHE is a symptom of many diseases. In addition to being the result of local causes, pain referred to the back is often due to disease or disorder in deep-seated organs. This is known as 'referred pain'. (See **PAIN**.)

Causes.—(a) **LOCAL.**—*Lumbago*, or a rheumatic condition in the muscles or nerves of the loins, which may be of a chronic aching nature, or may come on suddenly, feeling like a blow, is the commonest cause. A similar condition is often set up by unwonted exercise of these muscles in golfing, rowing, and the like. *Weakness* in growing boys or girls may cause a feeling of extreme weariness every day, and may be associated with lateral curvature of the spine, if not attended to. *Spinal disease* sometimes causes backache, and is associated with rigidity of the back, and often with great tenderness to the touch, with or without any deformity. *Stiffness* with pain sometimes follows some long-continued fever which has led to weakness in the back, especially found after typhoid fever; a state of permanent stiffness is sometimes found in old people in whom the spine has become the seat of chronic rheumatic changes leading to the formation of bony outgrowths between the different vertebræ.

(b) **INDIRECT.**—*Bright's disease* of the kidneys is sometimes a cause, in elderly persons, of pain in the loins. All sorts of *pelvic trouble* in women, such as menstrual disorders, prolapse of the womb, and ovarian inflammations and tumors, are constantly accompanied by a dull, dragging-down pain in the back. *Gall-stones* cause an acute pain high up near

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the right shoulder. *Stomach ulcers* and *catarrh* often cause a pain above the level of the last rib and close to the left side of the spine. Backache is also one of the first symptoms of fevers.

Treatment.—This is of course the treatment of the disease causing the pain. When the pain is due to a local cause, such as lumbago, the loins must be kept warm by extra clothing or a flannel belt. Belladonna plaster (see **PLASTERS**) relieves it, also massage, ironing with a flat-iron through a piece of cloth, and, in acute cases, application of mustard leaf, hot fomentations, or a hot-water bag. Weakness in young persons is got over by Swedish drill, and other forms of exercise, with regular daily periods of rest, and the careful avoidance of stooping or a twisted position at lessons. Perhaps the best exercise of all for strengthening the muscles of the back is got by the use of a skipping-rope.

BACTERIA is a term which at first meant micro-organisms in the form of short rods, but the word is now vaguely used to cover a great variety of low microscopic forms of plant life. It is equivalent to terms such as 'germs', 'microbes', 'organisms'.

BACTERIOLOGY is the branch of medical science concerned with the study of the lowest forms of plant life, particularly of those which cause disease in men and animals, and putrefaction. (For details on **INFECTION**, **ANTISEPTICS**, **VACCINATION**, and **SERUM**, see these headings.)

BALANITIS means inflammation of the parts covered by the prepuce.

BALDNESS is a condition largely associated with the habits of civilisation, and said not to occur in those primitive peoples who live constantly an open-air life. It is generally partial and slowly progressive, and is so universal that it may be looked on as a natural change in age. It may also occur rapidly in patches, or even every hair on the body may be

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lost, in the disease called alopecia areata.

Causes.—Certain *serious diseases* are associated with partial loss of hair as one of their symptoms; but these diseases are of so much greater importance that the thinness of hair is not taken account of, and as a rule this remedies itself as these diseases wear off. Such diseases are acute fevers, myxœdema, syphilis, consumption, anæmia, and great anxiety or nervous shock. Gradual premature baldness is, to a considerable extent, hereditary, and it is generally preceded for some years by seborrhœic eczema, a condition of dandruff on the scalp set up by bacterial decomposition of the natural oil of the hair. In this connection it may be remarked that curly hair, which lessens the pressure of the hat on the scalp, becomes less readily bald than straight hair. A habit of excessive perspiration about the head disintegrates the hair and quickens its loss, and, for this reason, baldness is very common in those who have lived much in the tropics. Many skin diseases, like lupus, erysipelas, ringworm, which leave a hardened condition of the scalp behind them, cause baldness, and such cases are made worse by the various stimulating hair washes sold for baldness.

Treatment.—A hard hat should be worn as little as possible, and in summer, in the country, or by the seaside, no cap should be worn. No hard brush or sharp comb should be used, as their irritation induces dandruff. The head should be frequently washed, say once a week, with extract of quillayia and hot water, or super-fatted soap, or a whipped-up egg. The hair should be always thoroughly dried after washing, and, if it remains hard and brittle, a little hair-oil composed of lanolin (1 part) and sesame oil (16 parts) may be applied. If baldness is definitely appearing, the hair, in boys, may be cut short and bay rum or spirit used

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daily to wash the scalp. This treatment makes the hair hard and bristly, and removes all dandruff. In people who prefer to wear the hair longer, the head may be daily washed, till the hair ceases coming out, with Hebra's soap, consisting of green soap (2 parts), rectified spirit (1 part), filtered and perfumed. After washing, the soap must be thoroughly rinsed out and the hair dried, and oiled as above. The many vaunted hair restorers contain either a little Goulard's water or, more generally, tincture of cantharides or Spanish fly. The latter is very stimulating in advanced cases, 1 drachm of vinegar of cantharides being used in 1 ounce of spirit to dab on the scalp, coupled with the washing mentioned above. It is of great importance to attend to the general health, for quite apart from definite disease, baldness advances more rapidly in those of poor health than in the robust. The hair should further be frequently cut (every three weeks), and singeing in many cases does good.

ALOPECIA AREATA, or patchy baldness, is very common on the scalp, but may affect the hair all over the body. Many authorities regard it as an infectious condition. In some cases it appears to be associated with general debility or with disease of the teeth, throat, or eye. These should be examined and, if necessary, treated. Locally, alopecia is treated with strong stimulating applications, and the hair generally returns, after a time, lighter in colour, or even white.

BALNEOLOGY is the department of medical science which deals with the giving of baths. (See BATHS.)

BALSAMS are substances which contain resins and benzoic acid. Balsam of Peru, balsam of Tolu, and Friar's balsam or compound tincture of benzoin are the chief. They are given internally for colds, and aid expectoration, while locally they are used to cover abrasions and stimulate

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ulcers. Friar's balsam, one teaspoonful, inhaled from a jug of boiling water often cuts short at their commencement colds and influenza. Balsam of Peru is given internally in doses of 10 or 20 drops with beaten-up egg; balsam of Tolu is similarly administered in doses of 10 to 20 grains, or is given as the more familiar syrup of Tolu in doses of one teaspoonful.

BANDAGES are pieces of flannel, calico, muslin, etc., used to support injured parts or retain dressings on wounds. The two usual forms are the triangular and the roller bandage.

Triangular bandages are used in ambulance work, on the battlefield, and whenever an easily applied temporary bandage is wanted. They are made by taking a piece of calico one yard square, and cutting it across cornerwise so as to form two triangles. The cut side of each is called the 'base', and the right-angled corner opposite, the 'point'. The bandage either singly, or two together, can be used for almost any part of the body, but is merely a covering intended to retain a dressing, and does not exert much pressure. A triangular bandage may be applied in one of three forms: (a) *open* as a triangle, sometimes with a hem turned over at the base, according to the size of the part to be covered; (b) *folded broad*, with the point turned in twice towards the centre of the base; and (c) *folded narrow*, like a cravat, the point being turned in three times. These bandages are of great use for first aid and for military work, as they take up little room, can be readily applied, and can be taken off easily without disturbing the injured part.

It is well that the knots of all triangular bandages should be reef-knots, which are much more easily undone than the other form; and it is essential that they should always be tied on the outer side of a limb, or in such a position that they can be

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easily removed without disturbing the injured part.

The applications of the triangular bandage in the treatment of fractures are described under **FRACTURES**, and for their adjustment as slings, see **SLINGS**.

Roller bandages are strips 10, 15, or 20 feet long, and varying in width from 2 to 4 inches, according as a limb or the body is to be covered. They are generally sterilised before use, or impregnated with some antiseptic (see **ANTISEPTICS**), and may be of flannel, which can be washed and used repeatedly, of calico, or of cheesecloth. The chief *methods* of applying roller bandages are: *Simple spiral*, in which the bandage circles up the limb, each turn overlapping half of that preceding. This is used for a cylindrical part of the body like the upper arm. *Spiral with reverses*, in which the bandage is turned sharply over on itself at each circle so as to lie smooth when the circles tend to separate widely. It is used for conical parts like the forearm or calf. *Figure of 8*, in which the bandage loops alternately round two parts of the body. It is used to cover a projection or hollow such as the shoulder or armpit, by looping round trunk and arm alternately. *Spica*, which is used for a joint, the turns covering one another completely in the bend of the joint, and separating partly over the prominence like the arrangement in a coat-of-mail. It is simply a modified figure of 8. *Trefoil* is a bandage applied to the head, and is the same in principle as the figure of 8, though it has three loops instead of two.

In applying a roller bandage the first circle must be firmly fixed by covering it completely with the next to prevent slipping; or a still better method of fixing consists in taking a figure of 8 turn round the limb, and covering this with the subsequent turns of the bandage. The bandage must pass upwards or the

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limb will become blue owing to the blood in the superficial veins being pressed backwards towards the extremity of the limb. It should cross the front of the limb from within outwards in order to give more room for making reverses towards the outer side. Where skin surfaces come into contact, one should be separated from the other by cotton wool, as otherwise moisture accumulates and the surfaces readily become abraded. This should be done, for example, between the fingers, behind the ear, in the armpit, etc. In order to make the bandage lie smoothly it is important in applying it that the head of the bandage should always, except in reversing, remain in contact with the part that is being bandaged, round which it is simply rolled.

The *width* of roller bandages varies: for the finger 1 inch is the usual width; for the head 2 inches; for the arm $2\frac{1}{2}$ inches; for the leg 3 inches; for the abdomen or chest 4 or 5 inches.

Bandages of special shape are used for certain parts of the body. The *four-tailed bandage* is made for the jaw or the crown of the head by tearing a four-foot strip of roller bandage up the middle from both ends, leaving about four inches untorn in the centre.

The *T-shaped bandage* for the fork is made by stitching the middle of a four-foot strip of roller bandage to the end of a similar strip which is torn up the middle for the greater part of its length; the untorn strip forms a waist belt, the divided part passes down through the fork and its ends are pinned to the part that forms the waist belt. The *many-tailed bandage* for the abdomen is made by stitching a strip of roller bandage down the middle of several four-foot strips, each of which overlaps one half of that below; shorter strips are used for fractured or painful limbs.

Bandages of special substance.—When a very rigid support is re-

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quired, calico roller bandages are rubbed with plaster of Paris in powder, dipped in water till bubbles cease to rise from them, and then, being applied wet, set quite hard and can be worn for months; or they are painted with water-glass, which also sets hard. A piece of lint or layer of cotton wool must always be placed next the skin before a plaster bandage is applied. Great care is necessary that plaster bandages are put on smoothly, so as not to press upon any one place, and so possibly produce an ulcer, and also that they are applied without stretching, so that they may not be too tight. The part to be bandaged must be supported so that the bandage can pass freely round without moving it; and it must remain motionless for twenty to thirty minutes after the bandage is applied, so that the latter may harden.

Elastic bandages are mentioned under **VEINS, DISEASES OF**.

BARBER'S ITCH or **SYCOSIS** is a name given to a skin disease in which the hair follicles about the chin are inflamed, forming pustules round the hairs, surrounded by a swollen and reddened area of skin. The disease occurs especially in debilitated persons, and is due to infection of the hair follicles with an organism or the ringworm parasite. It is generally attributed to a barber's utensils. For the treatment see **RINGWORM**.

BARBITONE (see **VERONAL**).

BARIUM SULPHATE is a heavy white powder used in X-ray diagnosis in doses of 2 or more ounces.

BARLEY-WATER is a beverage made by allowing 2 ounces of pearl barley to simmer for two hours with a quart of water, then adding sugar and lemon to flavour, and straining. It is given cold for sore throat, and is very soothing; it is also used as a food instead of milk, and as a cooling drink in fevers and in kidney disorders.

BATHS.—The main action of water is as a vehicle for heat, and baths act largely either by extracting heat from or adding it to the body.

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The sweat glands of the skin excrete some 30 ounces of water daily, containing about one-twentieth part of the nitrogenous waste of the body, and its excretory activity may be greatly increased by baths of high temperature. Baths also exert a pronounced effect upon the nervous system owing to the sensitiveness of the skin to heat, and to electrical, chemical, and mechanical influences. We give a description of the various baths; their uses are mentioned under various diseases.

A. WATER BATHS.—(1) **COLD.**—This is a bath about 60° Fahr. or 16° C. (cold-tap temperature). It should be taken while the body is warm, and its daily use forms an invigorating commencement of the day's employments, as well as preventing colds. The average person should go straight from bed to a plunge bath of the above temperature, or, if preferred, a warm bath of about 100° Fahr. or 38° C. may be first taken, and then a cold douche or sponge from the cold-water tap. The duration of the cold bath should be from a few seconds to two minutes, depending on the season, and the warm bath preceding it should last about five times as long as the cold. The bather should rub himself vigorously in both baths, and must at once rub himself dry with a coarse towel and quickly dress.

(2) **WARM.**—A warm bath is one ranging from about the body temperature, 99° Fahr. or 37° C., to about 110° Fahr. or 43° C. Water at 115° Fahr. can just be borne by the hand, but not by the whole body. A warm bath quickens the pulse, and after some time weakens the heart. It also causes free perspiration. A warm bath of about 104° Fahr. for ten or fifteen minutes, followed by a cold douche, in the robust, is one of the best means of preventing the stiffness which follows prolonged muscular effort, or of warding off a cold. But very warm baths are

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dangerous to those suffering from disease of the heart. The warm bath of 100° to 110° given for ten to fifteen minutes is useful for reducing blood-pressure in cases of kidney disease and relieves mental depression in cases of melancholy.

B. DRY BATHS.—**HOT - AIR BATHS** may be taken as the **TURKISH** or **ROMAN** bath, in a specially constructed building heated by pipes in the walls, with tepid room, hot room, washing room, and cooling room, through which the bather goes in succession. A hot bath may also be taken in an electric-light cabinet, where the person sits exposed to brilliant light and heat till he sweats copiously, when he takes a cold-water bath.

C. MEDICINAL BATHS.—(1) **MUSTARD BATHS** are used for the feet to check colds, and for the whole body as a good general stimulant, and in infectious diseases when the rash does not develop. For this, a handful of mustard is made into a paste with cold water and stirred into the warm bath.

(2) **SEA-WATER BATHS** are best taken in the sea. Brine baths are also found at various spas. Failing that, about 9 lbs. of common salt are added to 30 gallons of water. The effect is very stimulating. Such baths are much used in treating debilitated persons, cases of chronic rheumatism, and cases of glandular enlargement. A smaller amount of the same strength may be used to bathe the feet and legs of weakly children.

(3) **SULPHUR BATHS** are used for the presence in the water of sulphuretted hydrogen, which not only stimulates the skin but is to some extent absorbed. The bath may be prepared artificially by adding from $\frac{1}{4}$ to $\frac{1}{2}$ lb. of sulphuret of potassium or of yellow sulphur to 30 gallons of hot water. Sulphur baths are specially used in the treatment of inflammatory skin diseases and in rheumatism.

D. ELECTRIC BATHS may be

BEARBERRY

given in earthenware, stone, or wooden baths. The bath is filled with tepid water, in which the patient lies. An electrode hangs in the water at either end, not touching the patient, and a moderate current is passed through the water. This bath is very useful in cases of debility and neurasthenia. (See ELECTRICITY IN MEDICINE.)

BEARBERRY is a remedy used in chronic inflammation of the bladder, the infusion being given in doses of $\frac{1}{2}$ ounce or more.

BEAT ELBOW, **BEAT HAND**, and **BEAT KNEE** are terms applied by miners to an inflamed condition with swelling of the elbow, hand, or knee. The condition is particularly common in miners, but occurs in other trades also from constant pressure and the ingraining of particles of dirt, caused by the constant use of a tool or pressure in resting on the joints at work. The condition sometimes proceeds to suppuration, but usually subsides under soothing and antiseptic applications.

BED.—The bed used in cases of sickness should consist of an iron *frame* of at least 6 feet in length and 3 feet 3 inches to 3 feet 6 inches in width, and should be provided with a stiff *wire mattress*. A piece of canvas or felt, fixed to the mattress, should form a *mattress cover* to prevent rusting of the wire. Upon this is a mattress of wool, or, preferably, of hair. The mattress should have a loose cover of cotton, which can be washed from time to time as required. Over the mattress is placed a sheet which is tucked in firmly beneath the mattress all round to form the *under sheet*. The bed is completed by the *upper sheet* and *blankets*, varying in number according to the season of the year, and by a light *bedcover*. Two thin *pillows*, each covered by a linen or cotton pillow-slip, should be supplied, but it is important both in health and in disease that the support for the head should not be

BED

too high, and the pillows should simply be sufficient to fill up the distance between the head and shoulder when the patient lies on the side.

The bed should stand with its head towards the wall and the foot towards the centre of the room or ward, and there should be a free passage up either side for access by the attendants. In some diseases and injuries the bed requires special modification. In all cases confined to bed for longer than a few days a *draw sheet* is required. The draw sheet is formed as follows: An ordinary sheet is folded lengthwise so that the folded sheet is sufficiently wide to extend from the patient's shoulders to behind the knees. Between the folds of this is placed a mackintosh sheet one yard square, or it is often more convenient to place the mackintosh sheet beneath the draw sheet, directly upon the under sheet. This folded sheet is pushed at one end under the mattress, carried across the bed, and the superfluous length is folded up and pushed out of the way under the mattress at the other side. From time to time the sheet is pulled through beneath the patient towards the shorter end, thus bringing a fresh piece of sheet beneath the back. In *rheumatic fever*, *Bright's disease*, and other conditions in which the patient perspires profusely, the patient lies directly upon and is covered by a blanket, as the woollen material absorbs the perspiration better than sheets. In cases of *fracture* of a lower limb it is necessary to make the bed more rigid, and for this purpose boards are placed across the wire mattress. In cases of *bronchitis* it is frequently necessary to erect a tent over the bed, to cut off draughts or to retain a moist atmosphere produced by a steam kettle. This purpose can be effected by a light screen placed round the bed and covered with a blanket. In cases of paralysis, prolonged fever,

BED CHANGING

and other *devitalising conditions*, the patient may require to be placed upon a mattress which supports his body evenly instead of allowing pressure to come upon its most projecting parts. For this purpose a *water bed* may be employed, or, better, an *air bed*. The water bed is filled with warm water after it is placed upon the mattress, and care is taken to expel all bubbles of air by stroking it with the hand towards the inlet through which the water is poured. The pneumatic or air bed is much more easily managed, and is pumped up by an ordinary bicycle pump from time to time without the necessity of removing the patient. The under sheet is laid directly on top of the water bed, or air bed, as the case may be. A *bed rest* must sometimes be provided for patients unable to breathe comfortably in a recumbent position, or in order to change the position from time to time of a patient permanently confined to bed. For this purpose, four or five pillows may be placed behind the patient's back, or, preferably, a rest, consisting of a horizontal part hinged to a cane-backed rest resembling the back of a chair and supported on a strut is used and furnished with a couple of pillows. In order to give a still further change of position, a *bed table* may be used. This is supported on four legs some 3 feet 6 inches high and is of sufficient width (about 4 feet) to enable each pair of legs to stand on either side of the bed. Upon this the patient can lean forward.

BED CHANGING.—Two methods are adopted for changing the bed-clothes without removing the sick person from the bed. One of these, called *medical changing*, is generally applicable when the upper part of the body or head is affected. The other, known as *surgical changing*, is generally used when the lower part of the body is affected or when the lower limbs are the seat of fracture or similar disability.

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MEDICAL CHANGING.—The pillows are first removed; the patient is then turned upon one side (left) near the left edge of the bed. The soiled sheet with the draw sheet is then rolled up lengthwise from the right edge of the bed until the roll lies against the patient's back. The fresh sheet is made into a roll lengthwise; one edge is tucked in under the right edge of the mattress and the sheet is unrolled across the bed towards the left until the roll lies alongside the roll of soiled sheet. The patient is next turned on the back and then on the right side near the right-hand side of the bed. He now lies upon the unrolled portion of the fresh sheet. The soiled sheet, which now lies behind his back, is pulled off the bed and the roll of fresh sheet is unrolled and its edge tucked beneath the left-hand edge of the mattress. During this procedure the patient remains covered by the upper sheet and blankets. A fresh draw sheet is introduced by similar procedure. The pillows, having been placed in fresh pillow-slips, are again set under the patient's head.

SURGICAL CHANGING.—In some cases the under sheet is more conveniently changed from the top or bottom of the bed. To do this the edges of the soiled sheet are pulled out all round from under the edges of the mattress. The sheet is then pulled down under the patient's hips, and, finally, from under the legs. The fresh sheet is now rolled up from top and bottom to the middle, and the double roll is pushed through from the side of the bed beneath the patient's hips while an attendant raises these slightly from the bed. By gently easing up the patient's shoulders the upper half of the sheet is unrolled and tucked in at the top of the mattress, and by similarly elevating his legs slightly the lower half is unrolled and tucked in at the foot of the bed.

CHANGING DRAW SHEET.—When it is necessary to insert a fresh draw

BED SORES

sheet, the draw sheet is folded up as in the method for changing the under sheet and is introduced either by rolling the patient over or slightly elevating his hips. When the draw sheet requires to be replaced frequently it is more convenient to place the square of mackintosh on the under sheet and to insert the draw sheet above it separately.

CHANGING NIGHTDRESS.—When it is necessary to change the nightdress of a person confined to bed, the fresh nightdress should be warmed; one arm is then slipped out of the soiled nightdress and inserted into the corresponding sleeve of the fresh nightdress. The soiled nightdress is then slipped over the patient's head and removed, and the fresh one is slipped on and arranged. This should be carried out without removing the upper sheet and blankets. In the case of patients too ill to be much disturbed, the nightdress may conveniently be slit down the back.

BED SORES are areas of inflamed skin, tending to ulcerate, which appear upon the body or limbs of those long confined to bed, and especially of those much weakened by disease.

Symptoms.—Very often the invalid feels no pain, sometimes he complains only of a hard place or wrinkle in the bedclothes. The sites where sores commonly form are where the bones show plainly through the skin in the lower part of the back, on the heels, on the haunch, on one ankle, on the elbows, or on the shoulder blades. At first, for one or two days, there is redness of the skin over a prominence, which quickly turns blue and dusky. Then a black slough forms, and comes away, leaving a raw surface, which widens if not carefully treated.

Treatment.—The great treatment is preventive, by keeping the patient's back scrupulously clean and dry, by washing it daily with soap and water, sponging it with spirit in order to dry and harden the skin, and, finally, dusting it with a powder of zinc oxide or

BEEF-TEA

boric acid; by examining night and morning for any sign of redness; and especially by changing the invalid's position, so as to relieve the various prominences from constant pressure. If redness appears over a prominent part, this must be wrapped in dry cotton-wool, or the patient at once put on a water bed, which should be half or three-quarters filled with warm water, or better, upon an air bed. When a black, hard slough is forming, and the surface is breaking, the slough must be removed by wet dressings of boric lint or cold-water poultices of charcoal and linseed meal till the surface is clean, and then a return made to dry dressings, the invalid lying on a water bed or air bed, and not being permitted to rest on the sore. Another method is to dress the slough once or more daily with lint soaked in a saturated solution of picric acid dissolved in water or in water and spirit. (*See PICRIC ACID.*)

BEEF ESSENCE is a preparation of beef so made as to retain the proteins of the beef and, therefore, it has stronger nutritive qualities than beef-tea. To prepare beef essence one takes 1 lb. of lean beef, cuts it into small squares, and puts in an earthenware jar with two tablespoonfuls of cold water. The jar is covered with a lid and placed in a hot oven for three or four hours, or allowed to simmer in a saucepan for a similar period. The resulting fluid is then strained through muslin and the beef thoroughly squeezed, three or four tablespoonfuls of dark brown fluid being obtained. This may be administered to an invalid in doses of from 1 teaspoonful to 1 tablespoonful at a time.

BEEF-TEA forms a valuable stimulant for invalids.

To prepare beef-tea one should take 1 lb. of lean beef, cut into small squares, and place it in an earthenware jar with a pint of cold water. The jar is covered with a lid and

BELLADONNA

placed in a saucepan of hot water which stands by the side of the fire and simmers for three or four hours. The beef-tea is then strained through muslin and the residue of beef thoroughly squeezed ; a pinch of salt is added, and the beef-tea set aside to cool. Beef-tea is usually administered in quantities of one teacupful at a time, *i.e.* 5 or 6 ounces.

BELLADONNA (*see* ATROPINE) is the deadly nightshade plant.

BELL'S PARALYSIS is paralysis of the muscles of the face on one or both sides, causing inability to close the eye, to smile, to show the teeth, and the like, on the affected side.

BELTS AND BINDERS are very commonly worn, not only as articles of dress, but as supports and curative agents.

Uses.—Flannel or linen binders are worn by infants for warmth, as a support to the body, and because, for some time after birth, the region of the navel remains thin and weak ; such a binder should extend from the middle of the chest well on to the hips. Women, after labour, wear a binder because it gives a feeling of support ; it should be of similar extent to the infant's, and it is very important that it should be as tight as possible below, and very loose in its upper half. Narrower flannel binders give great comfort in cases of lumbago when worn next the skin, and are advantageous in the subjects of Bright's disease. Persons of all ages, with weak and easily tired back, get great support from wearing a broad belt, like that of a footballer, round the waist. When, however, the upper part of the body is subject to great muscular efforts, as in athletes and navvies, it is a great mistake to encircle the waist tightly with a narrow belt, which ought to run round in the hollow on either side between the summit of the haunch-bone and the hip-joint, and so give full play to the abdominal muscles and those of the loins. Elderly persons who have

BILIOUSNESS

a large, flabby abdomen often suffer from a form of dyspepsia due to want of support of the abdominal organs, which is relieved speedily by wearing a broad-shaped belt round the lower part of the abdomen, or corsets with such a belt attached. This abdominal belt should be tight in its lower part, and loose above the navel, to allow free movement of the stomach in digestion. Such belts are often fitted with special pads intended to support the stomach when this organ is displaced downwards within the abdomen. A similar but differently shaped pad is added inside the belt for the support of a displaced kidney. These pads may be formed of wool or may be of hollow india-rubber for inflation. Various ' magnetic ' and ' electrical ' belts are sold at large prices, but probably have no advantage over a simple broad belt of webbing. All such belts should be applied with the person lying on the back and easing the hips up as required.

BENDS is a condition of pain in the muscles affecting divers and other workers in compressed air.

BICARBONATE OF SODA, or BAKING SODA. (*See* SODIUM.)

BIDET is a fixed sitz-bath raised on legs which is used for administering douches and enemata.

BILE is a thick, bitter, golden-brown or greenish-yellow fluid, secreted by the liver, and stored in the gall-bladder. It consists of water, mucus, brown and green pigments, salts of two complex acids, and some mineral salts, and it is discharged through the bile-ducts into the intestine, a few inches below the opening from the stomach. This discharge is constant, but is much increased shortly after food is taken, and again, some hours later, when the food is digested.

BILIOUSNESS, or BILIOUS HEAD-ACHE, is rather a vague term, applied either to megrim (*see* HEADACHE) or to the headache and vomiting which

occur in acute catarrh of the stomach set up by errors in diet. (*See DYSPEPSIA.*)

BIOCHEMISTRY means the chemistry of living organisms and of vital processes.

BIRTH-MARKS are of various kinds. The most common are port-wine marks. (*See NÆVUS.*) Pigment spots are found, very often raised above the surface and more or less hairy, being then called moles.

BISMUTH is a metal, of which the carbonate, oxide, subnitrate, salicylate, and oxychloride are much used in medicine.

In irritative and painful conditions of the stomach or of the bowels, *e.g.* when diarrhœa or vomiting is present, they have a marked sedative action. The salicylate of bismuth especially is used to check diarrhœa, the usual medicinal dose of it or of the subnitrate being about 20 grains. The carbonate and oxychloride are of great use as an aid to X-ray diagnosis.

Externally, as dusting powder, they are used, both for a cosmetic and in eczema and other moist conditions of the skin, being commonly mixed, in equal proportions, with starch powder or oxide of zinc, or both.

BITES, STINGS, AND POISONED WOUNDS.—Bites of animals are in general to be treated as punctured or lacerated wounds (*see WOUNDS*), but seeing that animals' teeth are in general foul, suppuration is very apt to arise if the bite be deep. The bite of some reptiles, scorpions, spiders, etc., causes definite symptoms of poisoning, while, after the bites of several animals, especially the wolf and the dog, there is often a risk of hydrophobia. Wounds which are *septic*, *i.e.* poisoned by bacteria, are treated under **WOUNDS**.

Dog bites are generally treated with far more care than their seriousness deserves. Any simple dressing, such as boric lotion or carbolic lotion, may be applied on lint covered with

gutta-percha tissue, and the dressing renewed twice daily for a few days, till the wound is clean. Hydrophobia has been eradicated in Great Britain.

Snake bites are not necessarily poisonous, for not only are many snakes harmless, but persons can, like the snake-charmers of India, render themselves immune by the injection under the skin of gradually increasing doses of the poison. The principal poisonous snakes belong to the viper and cobra families, and all inject their poison through a pair of grooved or hollow teeth connected with poison glands. The adder of Europe is almost harmless to human beings, although dangerous to several animals. The symptoms of snake-poisoning are swelling and paralysis of the bitten part, with general depression, palpitation, difficulty of breathing, faintness, and later paralysis and convulsions, followed, in bad cases, by death. These symptoms appear within fifteen minutes to an hour after the bite.

Harvest-bugs, fleas, lice, and mosquitoes often cause great irritation of the skin by their bite. Harvest-bugs may bury themselves in the skin and have to be picked out with a needle. Lice may be got rid of, if in the hair, by saturating this with petroleum or carbolic lotion (1 in 60) and wearing an oilskin cap over-night for three successive nights. They may be got rid of from the clothes by baking these in an oven or fumigating with burning sulphur for several hours, or by the use of Vermijelli and N.C.I. powder. (*See further under INSECTS IN RELATION TO DISEASE.*) Mosquito bites are soothed by bathing with salt water or painting with sal volatile, oil, or laudanum, and they may be prevented to some extent by smearing the skin with camphor water, lime juice, or one of the oils of pennyroyal, lavender, cloves, or cinnamon.

Ants, bees, wasps, and hornets cause great irritation by the stings with which the females and workers are

BITTERS

provided. Those of ants are allayed by eau-de-Cologne or ammonia. Bees, wasps, and hornets sometimes leave a part of their sting as well as poison in the skin, and this should be looked for first of all and pressed out. The sting of a wasp in the throat, the insect having been taken into the mouth in biting a fruit, has caused death owing to rapid swelling, which blocks the air passage. Many things give relief from the pain, such as ammonia, soap, 'blue bag', chloral and camphor, tobacco juice, or onion juice locally applied.

Jellyfish and hairy-caterpillars, the former by threads which they discharge, and the latter by brittle, poisoned hairs, cause an itchy red rash after contact. It is relieved by vinegar or olive oil.

Nettle stings are relieved by bruised dock leaves or raw onion juice.

BITTERS.—Calumba, chiretta, gentian, and quassia are the chief pure bitters, others containing tannin and being also astringent. Bitters should be taken not less than half an hour before meals to produce the best effect. The dose of most of these bitters is $\frac{1}{2}$ ounce to 1 ounce of their infusion.

BLACK DEATH is an old name for plague.

BLACK DRAUGHT is a powerful purgative preparation, known also as compound senna mixture, and containing Epsom salts, senna, and liquorice. The dose is two to three tablespoonfuls.

BLACK DROP is another name for laudanum or tincture of opium. (See OPIUM.)

BLACK-HEADS (see ACNE).

BLACK MOTIONS are passed when there is great constipation, and when bismuth or iron is being taken; but the most common cause is blood changed by the digestive processes, and proceeding generally from ulceration somewhere in the stomach or bowels.

BLACK VOMIT is due to the pre-

BLADDER, DISEASES OF

sence of blood in the stomach. There may be dark masses, as in yellow fever, or a small amount of black sediment like coffee-grounds, as in ulcer of the stomach.

BLACK-WATER FEVER is a disease which occurs in Central Africa, the Southern States of America, the West Indies, and some parts of Southern Europe, and in which the urine is dark red or black from blood pigment.

BLADDERS are sacs formed of muscular and fibrous tissue and lined by a mucous membrane, whose surface is covered by smooth cells, and which is united loosely to the muscular coat, so as to allow freely of increase and decrease in the contained cavity. Bladders are designed to contain some secretion or excretion, and communicate with the exterior by a narrow opening through which their contents can be discharged. In man there are two, the *gall-bladder* and the *urinary bladder*.

GALL-BLADDER.—This is situated under the liver in the upper part of the abdomen, and its function is to store the bile, which it discharges into the intestine by the bile duct. For further details see GALL-BLADDER.

URINARY BLADDER.—This is situated in the pelvis, in front of the last part of the bowel. The bladder, in the full state, rises up into the abdomen and holds about a pint of urine. Two fine tubes, called the ureters, lead into the bladder, one from each kidney; and the urethra, a tube as wide as a lead pencil when distended, leads from it to the exterior, a distance of several inches.

BLADDER, DISEASES OF.—For diseases of the gall-bladder see GALL-STONES. (See also URINE.) The urinary bladder is subject to several diseases, but, partly through its general freedom from disease, partly owing to its inaccessibility, as it lies deep in the pelvis behind the pubic bones, partly owing to general ignorance as to its site and functions,

BLADDER, DISEASES OF

symptoms set up in it are very often attributed to the bowels and other organs. Diseased conditions in it are diagnosed in part by the symptoms they set up, in part by chemical and microscopical examination of the urine, and in the more obscure conditions by means of the cystoscope. The *cystoscope* consists of a narrow metal tube fitted up as a telescope, and bearing at its end a small electric lamp by which the cavity is lighted up. *Catheters* are tubes about the thickness of quills, which are made of metal, vulcanite, india-rubber, etc., and are used to draw off the water when it is not possible to expel this voluntarily, or, when the bladder is to be washed out for some diseased condition. (See CATHETERS.) The following are some of the chief diseased conditions :

CYSTITIS, or INFLAMMATION OF THE BLADDER.—When some cause is present to weaken the bladder wall, or, when bacteria are introduced in large numbers, for example on a dirty catheter, they multiply inside this organ and set up inflammation. In the course of a severe chill a mild cystitis may develop, but gets well in a few days or weeks. A severer form may come on in typhoid fever, pneumonia, and other weakening diseases. One of the most frequent organisms found in the urine in cases of cystitis is the common colon bacillus, which produces an acid condition of the urine. Tuberculous cystitis may be found, due to the tubercle bacillus, which produces a chronic ulcer on the bladder wall.

Symptoms.—Pain in the region of the bladder or in the small of the back, frequency of making water, and a condition of bad smell, turbidity, and whitish sediment in the water, are the chief facts noticed by the sufferer. There may in acute cases be high temperature and shivering fits. In the chronic form the very frequent desire to pass small quantities of water is the most marked symptom.

BLADDER, DISEASES OF

Treatment.—Rest in bed, hot hip baths, and hot applications, like poultices or fomentations to the lower part of the abdomen or the fork, along with simple diet and large quantities of water to drink, may be all that is necessary. When pain is severe, various sedatives are given, and, when there is much pus in the water, the bladder is often washed out through a catheter with permanganate of potassium. (See DOUCHES.) In the chronic form similar treatment is adopted. Drugs like hexamine, salol, and benzoate of ammonium, which lessen decomposition in the urine, are also given, and the original cause, be it a stone, stricture, tuberculous ulcer, etc., must be removed. Cases due to the colon bacillus are soothed by the administration of citrate of potassium in large doses by the mouth, this having the effect of rendering the urine alkaline and less irritating.

STONE, or CALCULUS, in the bladder may be of any size up to that of a hen's or goose's egg, but those which set up symptoms severe enough to necessitate operation are seldom smaller than a pigeon's egg.

Symptoms.—The symptoms of inflammation of the bladder, together with discomfort on movement, and sudden pain immediately after the passing of water, are those generally found.

Treatment.—Various substances have been administered with the view of dissolving the stone. The chief are water in large amount, potash, lithia, soap, lime-water, phosphate of soda, diluted mineral acids, piperazine, and mineral waters like Wildungen, Contrexéville, and Vichy. Those cases with a tendency to the deposits of oxalates are treated by attention to the diet and bitter tonics. When the stone is of any great size, it must be removed by surgical means, being either crushed by an instrument introduced through the urethra, and then washed out of the bladder in

BLAUD'S PILL

small fragments—the operation of *Lithotripsy*—or removed intact through an opening in the lower part of the abdomen—the operation of *Lithotomy*.

TUMORS in the bladder are sometimes the cause of large quantities of bright blood being passed with the urine. For their removal the bladder is opened through the lower part of the abdomen.

RUPTURE of the bladder may occur in old men who have long suffered from difficulty in passing water and cystitis, or in healthy persons owing to a blow or crush. (*See ABDOMEN, INJURIES OF.*)

BLAUD'S PILL is a pill containing carbonate of iron much used in the treatment of anæmia.

BLEEDER is a term applied to persons in whom it is difficult to stop bleeding when some small wound has been sustained. (*See HÆMOPHILIA.*)

BLEEDING (*see HÆMORRHAGE and BLOOD-LETTING.*)

BLINDNESS (*see VISION, DISORDERS OF.*)

BLIND SPOT (*see EYE.*)

BLISTERS AND COUNTER-IRRITANTS.—These are employed in cases both of acute and chronic inflammation, on the principle proved by experiments on animals that irritation of the skin causes congestion of the parts immediately below the skin, while it relieves congestion of deep-seated organs, through an action upon the nerves that regulate the size of the minute blood-vessels.

Mustard is made into a paste and spread on muslin or brown paper, and so applied directly to the skin for twenty to thirty minutes, until a warm glow is felt. Mustard leaves can also be purchased and similarly used after moistening. If a more powerful action be desired, mustard may be dusted thickly over the surface of a linseed-meal poultice, and this applied for a similar length of time. After-redness is less if muslin has been placed between the mustard and the skin. In children, ten

BLISTERS

minutes may be sufficient for the action of a mustard plaster, and one must be careful not to apply mustard too long in weak persons and children, or a slough may result. For a milder effect the paste may be made with equal quantities of mustard and flour. The skin should be sponged with warm water, dried, and anointed with a little vaseline after the mustard is removed.

Turpentine and *cajuput oil* are generally sprinkled, about a teaspoonful at a time, upon flannel cloths, which are then wrung out of hot water, and used for pain in the abdomen or back. (*See POULTICES and FOMENTATIONS.*)

Tincture of iodine is usually painted on the skin once or twice a day till the cuticle comes off in flakes, but just short of blistering. It is used over enlarged glands and joints, and also to a great extent in chronic lung diseases.

Cantharides blisters are produced by painting on *Liquor Epispasticus* (blistering fluid), or by applying cantharides plaster, of which the black surface is oiled and then placed against the dried skin, and which is secured with strips of adhesive plaster or with a bandage or handkerchief. Sometimes cantharides is applied in an ointment containing the powdered insects. Care must be taken not to apply a blister over a bony prominence in a person who is weakly or confined to bed, or healing may be very slow. The application is left in position for some hours (if large), or over night (if small), and, when it is removed, olive oil should be applied to remove any particles of cantharides still in the skin, and prevent another blister rising. The bleb should be pricked at once, but on no account should the raised skin be cut away till the skin beneath is hard—that is, after two or three days. The blistered area should be dressed for a day or two with some simple ointment spread on lint.

BLOOD

BLOOD is a fluid which circulates through the arteries, capillaries, and veins exchanging fluid and gases with the bodily tissues.

There are over 5,000,000 red corpuscles in every cubic millimetre of blood, the blood of women containing slightly fewer than that of men. The *white corpuscles* are of several different kinds, and wander through the walls of the small blood-vessels, upon occasion, into the tissues; here they have many functions to perform, of which the chief are the repair of wounds, the absorption of foreign bodies, and the destruction of bacteria; their dead bodies form, when in large numbers, the matter or pus of abscesses. Their number is less than 1 to 500 of the red corpuscles.

Amount of blood.—This is about 1 lb. for every 14 lbs. of total body weight, so that a fairly heavy person has 12 to 14 lbs. of blood or about $5\frac{1}{4}$ pints. A loss of 5 lbs. has, however, been known to cause death.

Functions of blood.—The red corpuscles act as oxygen carriers, the white corpuscles have mainly a defensive action against the onset of disease. The fluid of the blood carries in solution various waste-products such as carbonic acid gas to be exhaled by the lungs, urea and salts to be removed by the kidneys; also it distributes food-stuffs, such as sugar and proteins absorbed from the intestine and elaborated by various glands; and it forms a general medium of communication between organs that are chemically interdependent, for example carrying to the stomach the materials for the gastric juice, to the muscles ferments formed in the pancreas, etc., and absorbing secretions needed for the general purposes of the body, like those of the thyroid gland and suprarenal bodies.

BLOOD, DISEASES OF.—As the blood is the carrying medium for the whole body, it readily responds to diseased change in any part. After every meal its chemistry is markedly

BLOOD-LETTING

altered, and, in such conditions as diabetes and gout, it contains, in great excess, substances which are quite normal in small amount. Still more complex changes occur when bacteria or their products find their way into the blood, which possesses the power to produce various substances that destroy the bacteria or prevent the action of the poisons they form. (See under SERUM.)

Even in so apparently trifling a condition as habitual constipation, when the blood absorbs foul gases and waste substances from the bowels, there is great interference with bodily activity, and impairment of memory and intellectual power, together with indigestion, foul breath, loss of appetite, various pains and aches, and generally feeble health. It can thus be readily understood how most of the widely advertised and wonder-working patent medicines consist simply of purgatives or aperients.

Some diseases, such as tuberculosis, syphilis, myxœdema, are popularly regarded as diseases of the blood, since they are firmly ingrained in the system, but these are, in the first place, affections of definite organs from which they poison the whole body. These various conditions are considered under other headings. (See ACIDITY, CONSTIPATION, DIABETES, GOUT, etc.) There are also diseases affecting the corpuscles of the blood, of which the chief are anæmia and leucocythæmia. (See under these heads.)

BLOODLESSNESS. (See ANÆMIA.)

BLOOD-LETTING was a practice much in vogue for various ailments over half a century ago. Indeed many people had themselves bled regularly for the purpose of avoiding the bad health consequent on over-eating and over-drinking. It came, in time, to be so much abused—many sick people undoubtedly having died, not of the original disease, but of the excessive bleeding practised for its cure—that it fell into almost com-

BLOOD-POISONING

plete disuse. Many conditions are, however, much benefited by withdrawing blood either from the affected part or from the general circulation.

BLOOD-POISONING is, in general, a very serious condition, and is known as 'septicæmia' or 'pyæmia', according as the sufferer is simply poisoned by substances circulating in the blood, or as he develops, in addition, abscesses at different points over his body, owing to bacteria deposited from the blood. There is a slighter form called 'sapræmia', in which the person becomes fevered and ill owing to the absorption of foul or putrid substances from the bowels or from wounds, but is not dangerously affected (*see* BLOOD, DISEASES OF), and there is a chronic form called 'hectic fever', in which constant absorption of poisonous material takes place from cavities in the lungs of consumptives, from diseased bones, etc. (*See* CONSUMPTION.)

Causes.—Wounds or inflamed areas, especially in bones, joints, and veins, may be invaded by specially virulent bacteria, or owing to great constitutional weakness of the person, for example, in alcoholics or diabetics, the bacteria may find a specially congenial soil for their growth. Women after delivery are specially liable to infection, suffering from the dreaded 'puerperal' fever.

Symptoms.—In septicæmia very high temperature, followed speedily by death, may be the only sign. In pyæmia there are, in addition, shivering (rigor), profuse sweating, pains in the joints and muscles, and the signs of abscesses at different points, which may last over days or weeks.

Treatment.—Antiseptic surgery has immensely reduced the frequency of blood-poisoning. Quinine and other substances are given internally to allay the fever. Cases due to infection by micrococci have recently been successfully treated by injection of antistreptococcic serum (*see* SERUM)

BLOOD-PRESSURE

but active surgical treatment by amputation, opening of abscesses, antiseptic douches, etc., according to circumstances, is the chief need.

BLOOD-PRESSURE is the name given to the pressure that must be applied to an artery, say in the arm, in order to stop the pulse in the vessel beyond the point of pressure. It is generally assumed to be equivalent to the pressure to which the blood is subjected by the force of the heart and the elasticity of the vessels, but it is also dependent on the thickness and hardness of the vessel wall, and to a less extent on some other considerations. The blood-pressure in young persons is between 110 and 120 mm. of mercury, and rises gradually with advancing years to about 150 at the age of 60.

The blood-pressure is raised by exposure to cold, by kidney disease, by disease of the blood-vessels (arteriosclerosis), by some disorders of the ductless glands, and to a slight extent in neurasthenia and melancholia. A blood-pressure of 180 is not uncommon in cases of chronic kidney disease, and it may, in advanced cases, be as high as 250 or occasionally even 300 mm. The pressure is below the normal as the result of warmth, *e.g.* after a hot bath, in exhaustion, weakening diseases, fevers, and generally in diseases of the heart.

An abnormally high blood-pressure is often accompanied by disease of the arteries, so that persons with greatly raised pressure are specially liable to apoplexy. In cases associated with advanced disease of the kidneys, the heightened blood-pressure is to some extent a salutary matter, because the circulation of the blood through the diminished vessels of the kidneys is thereby increased. In such a case the general health of the patient is better while the pressure remains moderately high, and if it be reduced too much by drugs and other means the general health deteriorates. In cases where the pressure is excessive,

BLOOD-SPITTING

however, it may be lowered to some extent by a saline purgative every morning, hot baths, low diet, and the administration of certain remedies, such as nitrites, iodide of potassium, thyroid extract, etc.

BLOOD - SPITTING. — For the causes of this see EXPECTORATION, for its treatment see Control of Internal Hæmorrhage in the article HÆMORRHAGE.

BLOOD-TRANSFUSION (see TRANSFUSION OF BLOOD).

BLUE PILL, or **MERCURY PILL**, is a very favourite household purgative. It contains mercury, confection of roses, and liquorice. Not only is it purgative, but it also stimulates the activity of the liver. The dose is from 3 to 8 grains.

BOILS, or **FURUNCLES**, are small areas of inflammation starting in the roots of hairs, and due to the growth of a micro-organism (generally that known as a staphylococcus). When a large number of boils form close together at one time the mass is called a 'carbuncle'.

Symptoms.—A red swelling forms round a hair, and causes a good deal of irritation and scratching. It gets larger for some days, being, as a rule, not very painful, unless subject to chafing. When, however, the boil begins on the head, in the ear, or in the nose, where the tissues will not stretch readily, the pain may be very great. Even after two or three days the swelling may slowly subside, and the inflammation gradually pass off, the boil being said to 'abort'. In most cases, about the sixth or seventh day the top of the boil breaks, and some thin fluid, and perhaps matter, oozes out. The yellowish 'core', consisting of a small mass of dead tissue, is now seen occupying the interior of the boil, and this comes away about a couple of days later, after which the boil speedily heals. If the boil be not treated, however, the first is very apt to be followed by a crop of others in the neighbourhood,

BOILS

owing to the discharge from the first boil infecting other hairs. There is a special danger in boils of the upper lip and nose; for these may lead to inflammation within the head. Generally a boil, though its presence causes great annoyance, does not lead to fever or other general symptoms. But in boils of the ear, or about the face, there may be high temperature and great prostration, which are serious signs. Carbuncles are exhausting, and, in old people, very dangerous.

Treatment.—At first the boil should be kept as still as possible, and to this end a piece of antiseptic sticking-plaster, with a small hole cut in the centre, through which any discharge can pass, may be applied over the boil and kept in position for several days, when the boil very often aborts. Another method to prevent boils coming to a head is to paint the boil and a small area of skin round it night and morning for several days with strong tincture of iodine (10 per cent). If, however, the boil is painful, or if it is proceeding to supuration, a wet antiseptic dressing (boracic acid 1 in 40) covered with oil-silk, wool and a bandage should be applied. When the boil has burst and the core come away, it is a good plan to wipe out the cavity with a minute drop of pure carbolic acid, which kills all remaining bacteria. Carbuncles, painful boils and boils about the lip and nose are generally opened at once, and wiped out with pure carbolic acid, but healing is then slower than if the boil be allowed to run its course. General treatment in the direction of tonics, good food, avoidance of alcohol, and free daily evacuation of the bowels by a saline, such as Epsom salts or Seidlitz powder, is also necessary; and the taking of calcium sulphide in small doses often repeated ($\frac{1}{4}$ grain six times a day), or of yeast in larger doses, is said to prevent the formation of new boils. New boils are more effectively

BONE

prevented from forming by rubbing powdered boric acid gently into the skin around the old boil twice a day after washing and drying.

BONE forms the framework upon which the rest of the body is built up. The bones are generally called the 'skeleton', though this term also includes the cartilages which join the ribs to the breast-bone, protect the larynx, etc.

Bone is of two kinds, dense and spongy, and these two types of bone in different proportions form various shapes including (a) long bones like those of the limbs; (b) short bones composed of spongy tissue like those of wrist and ankle; (c) flat bones like those of the skull; (d) irregular bones like those of the face or the vertebræ.

The **skeleton** consists of over 200 bones. It is divided into an **AXIAL** part, consisting of the skull, the vertebral column, the ribs with their cartilages, and the breast-bone, and an **APPENDICULAR** portion consisting of the four limbs. The bones of the upper limb include the shoulder-blade and collar-bone, the humerus in the upper arm, the radius and ulna in the forearm, eight small bones in the wrist with five bones in the fleshy part of the hand and fourteen in the fingers. The lower limb consists of three bones, the ilium, ischium, and pubis, joined together to form each side of the pelvis, the femur in the thigh, the tibia and fibula in the leg, seven small bones in the region of the ankle with five bones in the front part of the foot and fourteen in the toes. The hyoid bone in the neck, together with the cartilages protecting the larynx and windpipe, may be described as the **VISCERAL** skeleton.

BONE, DISEASES OF.—Owing to the facts that most bones are deeply buried in the muscles, and that they contain in their earthy matter so much indifferent material, diseases in the bones are both apt to escape notice for a long time, and are actu-

BONE, DISEASES OF

ally much slower in their progress than similar diseases in other organs.

ACUTE INFLAMMATION is the disease which produces the most rapid effects. It is divided into acute *periostitis*, or inflammation of the surface of the bone and its enveloping membrane; acute *osteitis*, or inflammation of the bony substance itself; and acute *osteomyelitis*, or inflammation in the bone and its central cavity. These three form grades of severity, the condition having more marked symptoms, and requiring more serious operative treatment, the deeper it is situated in the bone.

CHRONIC INFLAMMATION includes several quite distinct conditions, viz. abscess, necrosis and exostosis, these conditions usually being due to injury, syphilis, or tuberculosis.

ABSCESS occurs generally in boys about the age of fourteen or fifteen, and the bone usually affected is one of those in the lower limb. The cause is either some local injury or local tuberculous disease.

NECROSIS means death of a bone, and generally follows acute bone inflammation. It also follows severe fractures, occurs in match-makers from the contact of phosphorus, in syphilis, and occasionally at the end of some severe infectious disease like scarlatina or typhoid fever.

EXOSTOSIS is an outgrowth upon a bone, which may be produced by long-continued irritation, *e.g.* the bony growths on the inner side of the knee of those who ride much; or may be a symptom of syphilis; or may be of the nature of a tumor. (*See below.*)

SYPHILITIC DISEASE of bone in the secondary stage of this disease takes the form of 'nodes' or swellings due to localised inflammation of the periosteal membrane, and in the tertiary stage there are often areas of great hardening with necrosis of pieces of bone.

TUBERCULAR DISEASE in bone as a rule occurs in young people, but it also is found now and then in a person well up in years (senile tuberculosis). It may occur (a) in the bones of the hand or foot, in which case very often several are affected; (b) in the ends of the long bones, when it is very apt to lead to disease of the neighbouring joint; (c) in the vertebræ, where it often results in curvature of the spine, or produces a chronic abscess. 'Caries' is the name given to a crumbling condition of the bone produced by this disease.

Symptoms.—Generally the health is not first-rate. There may be a heredity of tuberculosis in other organs, e.g. of consumption. There are generally pain, tenderness, and swelling of the affected part. The whole limb, when a toe or finger is affected, may feel hot. Later the skin may get red and thin, and a chronic abscess form and burst, leaving a sinus. Or the condition may heal, leaving the bone only a little thickened. The progress is in any case slow, lasting many weeks or months.

Treatment.—Tonics and good food are all-important. Rest to the part affected and general exercise of the body in the fresh air are necessary. When the skin threatens to break, this should be anticipated by an operation, in which the diseased bone, etc., is all scraped away, or even amputation may be advisable in very bad cases. (See further under **JOINTS, DISEASES OF.**)

TUMORS.—**CHONDROMA**, a small tumor of cartilage and bone, grows sometimes under the nail of a finger or toe, and causes a good deal of pain. **SARCOMA** is a tumor sometimes found, especially in the larger bones, causing the bone to break readily, or dilating it to a great size; amputation is necessary for its removal.

RICKETS is a disease of childhood in which the bones do not

harden as they ought to do. (See **RICKETS.**)

ACROMEGALY is a disease in which bones enlarge in size.

OSTEITIS is a general term applied to inflammatory conditions of bone. It includes *osteitis deformans*, in which the long bones become curved and the skull thickened; also *osteitis fibrosa*, in which bones become thickened and softened.

OSTEOMALACIA is a rare disease, affecting the poorer classes, especially women, and of these, women who have had many children in quick succession. It consists in a gradual loss of lime salts in the bones, so that these become soft and lose their proper form.

BONE-MARROW is a remedy used of late years in diseases of the blood. The red marrow of the smaller bones produces some at least of the red corpuscles of the blood, and it has been supposed that the administration of this red marrow, either raw in sandwiches or extracted in glycerin, is beneficial in pernicious anæmia.

BORACIC ACID, or **BORIC ACID**, is found in volcanic districts, or is prepared from borax. It is a mild antiseptic.

Uses.—It is used very widely for dressing wounds, either dusted on as powder or in a lotion (1 part in 30). This lotion, mixed with an equal quantity of warm water, makes an extremely good eye-wash for painful and inflamed eyes. Lint is sold ready soaked in boric lotion, dried, and generally dyed pink; it requires only to be dipped in water and applied. Offensive perspiration of the feet is checked by dipping the stockings in boric lotion and drying them before wearing. Boracic ointment is used for dressing ulcers or for lubricating instruments.

BORAX, or **BIBORATE OF SODA**, acts in much the same ways as boric acid, but has not its acid reaction.

Uses.—Its chief use is in the form of a lotion (about 1 part to 30 of

BOROLYCEERIDE

water) in all forms of itching and chapping of the skin. In 'thrush' and other forms of irritation about the mouth in children the glycerin of borax, smeared on several times a day, is very soothing. To clean the mouth as well as soothe it, borax in honey wiped over the gums and tongue is very good. Borax is also given internally in epilepsy.

BOROLYCEERIDE is a clear unctuous antiseptic, made by dissolving boric acid crystals in glycerin while hot.

BOTULISM is a term applied to a type of food-poisoning caused by the toxin arising from the presence in improperly preserved foods of the *Bacillus botulinus*.

BOUILLON is a broth or soup prepared from flesh. It is much used in various food preparations and also as a medium for cultivating organisms in bacteriological laboratories.

BOWELS (see **INTESTINE**).

BRACHIAL means 'belonging to the upper arm'.

BRAIN.—The brain and spinal cord together form the central nervous system, the twelve nerves passing on each side from the brain, and the thirty-one from the cord being called the peripheral nervous system, while the complex chains of nerves and ganglia lying within the chest and abdomen, and acting to a large extent independently of the other two systems, though closely connected with them, make up the visceral or sympathetic system, and govern the activity of the abdominal and other organs. The principal parts of the brain are (1) the cerebrum, cerebral hemispheres or fore-brain, which forms the greater part; (2) the basal ganglia or twist-brain; (3) the mid-brain; (4) the cerebellum and pons forming the hind-brain; (5) the medulla or after-brain, in which some of the centres most essential to life are situated. The last is continuous with the spinal

BRAIN, DISEASES OF

cord through the large opening in the base of the skull. Twelve nerves come off from the brain on each side, of which most are concerned with the special senses.

BRAIN, DISEASES AND INJURIES OF.—The signs of brain disease are in general very indirect, being manifested by some defect in sensation or in the power of action, or by some peculiarity of conduct. The symptoms are more fully discussed under **NERVOUS DISEASES**. (See also **APHASIA**, **APOPLEXY**, **ENCEPHALITIS**, **EPILEPSY**, **HEADACHE**, **HYDROCEPHALUS**, **INSANITY**, **MENINGITIS**, **PARALYSIS**.) The following are some of the conditions more exclusively connected with the brain.

ABSCCESS is a very serious condition. It results from wounds of the scalp which suppurate and in which the matter does not get free exit, or, far more commonly, from suppurating ear disease, in which the discharge from the ear has been stopped.

COMPRESSION OF THE BRAIN may be caused by the growth of a tumor in the brain, a collection of blood between the brain and skull from injury of the membranes, or suppuration in the same locality from a neglected scalp wound or fracture of the skull. Unconsciousness coming on some hours after a blow on the side of the head is generally due to a fracture tearing one of the arteries in the membranes and producing a large clot between the skull and brain. The symptoms are vague, but, in addition to unconsciousness, there are generally difficulty of breathing, feeble pulse, and paralysis down one side of the body. The treatment is trephining of the skull to let out the blood or pus. The condition is extremely serious. (See **TREPHINING**.)

CONCUSSION is a bruising of part of the brain as the result of a blow on the head (generally at the back) or a severe shake of the body. Cases vary in severity from mere giddiness and headache for an hour or two, to

complete loss of consciousness lasting for weeks, and include those curious instances of lost memory for facts or even for personal identity which have been much used by novelists. The treatment is complete rest in a darkened room, fluid food, cold to the head; the urine often requires to be drawn off by catheter, and purgatives are necessary.

BRAIN FEVER is a popular name for several conditions. One is a state of prostration following some severe mental strain, which is not very serious and passes off in the course of a few weeks of rest. Another condition known under this name is encephalitis lethargica, also known popularly as 'sleepy sickness', in which inflammatory changes accompanied by œdema and hæmorrhages take place in parts of the brain, causing a serious and often fatal disorder. (See ENCEPHALITIS LETHARGICA.) Another condition often called by this name is inflammation of the membranes of the brain or meningitis, which occurs most commonly in children or in persons suffering from tuberculosis, and which is a very fatal disease. (See MENINGITIS.)

HÆMORRHAGE into the brain causes apoplexy. (See APOPLEXY.)

SOFTENING of the brain is a term used in a strictly scientific sense and in a popular sense. In the former case an actual area of brain tissue softens owing to its blood supply being cut off by plugging of its blood-vessels, or in consequence of some long-standing inflammatory process. The symptoms are then those of apoplexy, though not so sudden as if the cause were hæmorrhage. In the popular sense, when persons who have been the subjects of gout, alcoholism, or syphilis, especially elderly persons, become gradually dull in intellect, drowsy, absent-minded, emotional, and finally demented, in consequence of their diseased blood-vessels diminishing the blood supply to, and causing deterioration of, the brain, these

symptoms are also attributed to 'softening of the brain'.

TUMORS of the brain produce very insidious and very complex symptoms, depending on the region they affect. Among the general symptoms are headache, giddiness, vomiting independent of food, and tenderness of the head on pressure. Blindness and mental symptoms come on later, owing to rise of pressure inside the skull. Sometimes these tumors are tuberculous or syphilitic in origin, when the general treatment for these diseases may be of some help, but otherwise little good can be done, except palliation of the pain and other symptoms by trephining to relieve the pressure. Occasionally a tumor produces definite 'localising' symptoms indicating its position in the brain. In such cases an operation may occasionally be performed for the complete and successful removal of the tumor.

BRAN is the meal derived from the outer covering of a cereal grain. It contains little or no carbohydrate, especially after it has been washed.

BRANDY (see ALCOHOL).

BREAD is usually prepared from wheat flour which contains about 15 per cent of water, 8 to 12 per cent of gluten (vegetable albumin), and about 70 per cent of starch together with small quantities of sugar and dextrin.

Other grains used for bread-making are barley, which is slightly deficient in albuminous material but richer in mineral matter than wheat; rye, which produces a dark-coloured, sour bread equal in nutrition to that of wheat but somewhat liable to produce diarrhœa in those unaccustomed to it; oats, which produce a granular type of bread with laxative properties, that is much richer than wheat in fat and mineral matters; and maize, which is richer in fat but poorer in mineral matter than wheat, and of which the albuminous material seems to be defective in nutritive qualities.

BREASTS

BREASTS, or MAMMARY GLANDS.—

These glands are developed in the skin of the chest, and, in the full-grown female, extend from the second rib above to the sixth or seventh below, being at the centre about 2 inches thick, one on each side. In the centre of each is a dark patch, called the 'areola', which surrounds the nipple. This areola darkens during pregnancy. This, together with enlargement of the whole breast and dilatation of its veins, forms an important and early sign of this condition. In structure each breast consists of from twelve to twenty compartments, each of which contains a system of branching tubes lined by cells that form the fatty and fluid materials composing the milk. In each section the tubes open on the surface of the nipple by a single small tube, or duct, of which therefore there are twelve to twenty in all. Between these gland tubes lie muscle fibres (which give the breasts their firmness), fibrous tissue, and fat (which is specially plentiful in elderly women).

BREASTS, DISEASES OF.—These glands go through great changes during the course of life, becoming considerably enlarged about the age of puberty, afterwards congested at each monthly period, then undergoing great development during pregnancy, so as to be double the usual size during the time of suckling, and finally, with advancing years, undergoing gradual absorption, though, in stout persons, their actual size increases from deposit of fat. Owing to this variability these organs are very frequently affected by several diseases.

ACUTE INFLAMMATION AND ABSCESS.—**Symptoms.**—Discomfort in some part of the breast, with increased hardness and fullness, usually towards the lower edge, is first noticed, and, if treatment be then begun, the majority of cases do not go on to abscess. If the condition remains

BREASTS, DISEASES OF

untreated, distinct pain next comes on, especially when the infant sucks, along with redness, swelling, and heat, the general signs of abscess. Finally, the skin over one spot, usually about a couple of inches from the nipple, turns purple, and here the abscess bursts.

Treatment.—When, owing to tenderness in, or insufficient development of the nipple, the child does not take one breast, either this should be regularly emptied by a breast pump to avoid tenseness, or the medical adviser should be consulted as to the weaning of the child. Tender nipples are often relieved by bathing with weak carbolic lotion (1 in 40), by smearing on glycerin of borax, or by dressing with lint steeped in boracic lotion (1 in 30), or boracic lint covered with gutta-percha tissue, while the infant is not on the breast. If a part of the breast is getting hard, the breast must be supported either by a suitably shaped plaster beneath the breast, or by a bandage passing alternately round the waist beneath the breast, and over the opposite shoulder from beneath the breast. Warm moist cloths may be applied to soothe the discomfort, and the breast should be emptied by a breast pump. If the hardness be increasing, and if pain comes on, the child must be weaned, and the secretion of milk stopped by taking doses of Epsom salts or other purgative, and by applying to the breast some preparation of belladonna. When an abscess has formed, it is opened like an abscess elsewhere, and this should be done early, otherwise the matter is apt to burrow into other parts of the breast.

CHRONIC INFLAMMATION, or MASTITIS, may take the form of a chronic abscess, but, more commonly, it consists of simple swelling and pain in one part of the breast, often erroneously believed to be cancer by the affected person.

Symptoms.—This inflammation is

BREASTS, DISEASES OF

often associated with some disturbance of the pelvic organs and menstrual irregularity. Pain is the most important symptom, being frequently very severe and generally widespread over the breast, up to the neck, and down the inside of the arm. One or more swellings are generally visible on the breast, though their outline cannot readily be felt. There may be general ill-health, with loss of sleep and of appetite.

Treatment.—The condition is made much worse by the patient allowing her mind to dwell on it and by constant handling of the swelling, so that when the breast is completely covered up by some soothing plaster, such as belladonna plaster, complete recovery may speedily take place. Sometimes, if the pain is very severe, in elderly women, removal of the breast is advisable, even though no serious disease be present.

NEURALGIA may be very painful during pregnancy, in pelvic disorders, or in general troubles like anæmia and rheumatism. It is treated like neuralgia elsewhere.

CRACKED NIPPLES are sometimes very troublesome. For their treatment see under Acute Inflammation above. When there is a chronic eczematous condition, a metal or vulcanite nipple-shield should be applied and fixed with plaster or tapes.

TUMORS.—In consequence of the fact that the breast is one of the organs most frequently attacked by cancer, many women render themselves unnecessarily unhappy over some swelling in the breast, taking for cancer what is often simply chronic inflammation, or a cyst or adenoma, the two latter being common non-malignant growths. In every case, immediately a woman discovers a small nodule in her breast she should consult a surgeon. If the swelling be not cancer—and usually it is not—her mind will be relieved, and the treatment, whether

BREATHLESSNESS

by operation or not, will not in general necessitate the removal of the breast. If cancer be present, then the earlier an operation be done the more chance there is of a complete cure.

BREATH, DISORDERS OF.—(*See BREATHLESSNESS, CHEST, DISEASES OF, and LUNGS, DISEASES OF.*)

BAD BREATH is sometimes extremely unpleasant to those around the subject of the trouble, though the smell may be extremely foul without the person himself being conscious of it.

Causes.—Frequent causes are bad teeth, chronic tonsillitis, constipation, and indigestion. Besides these an excessively foetid condition is caused by bronchiectasis (*see LUNGS, DISEASES OF*), by ulceration about the bones of the nose, and by a peculiar disease of the nose, known as ozæna, in which smelling crusts constantly form there. (*See NOSE, DISEASES OF.*)

Treatment.—Bad teeth should be stopped or pulled, and the spaces between the teeth kept clean by brushing after each meal. (*See TEETH.*) Constipation is a very common cause, gases from putrefaction of food in the intestine being absorbed into the blood and excreted by the lungs. (*See CONSTIPATION.*) In one form of tonsillitis, small cheesy pellets of secretion collect in the hollows of the tonsils and putrefy; the tendency to this is lessened by cutting the tonsils, or by using daily some solvent or antiseptic gargle. (*See GARGLES.*) Indigestion with furred tongue is also credited with being a frequent cause of bad breath. (*See DYSPEPSIA.*) The smell may be temporarily relieved by placing a small drop of some essential oil, such as cloves, occasionally on the tongue, or by various scented sweets.

BREATHLESSNESS may be due to any condition which renders the blood impure or deficient in oxygen, and which therefore produces ex-

BRIGHT'S DISEASE

cessive involuntary efforts to gain more air.

Treatment.—In young girls who become breathless on very slight exertion the treatment is generally that for bloodlessness. (*See ANÆMIA.*) Adenoids in the throat and the method of their removal are mentioned under NOSE DISEASES. For the treatment of breathlessness in stout people, see CORPULENCE. In all conditions of breathlessness due to disease of a lung, the patient finds most ease in breathing when he lies upon the affected side. In most inflammatory conditions of the air passages much relief is gained from steam inhalations. The subjects of heart disease, if able to go about, should not unduly exert themselves, and are benefited by one of the special heart tonics mentioned under HEART DISEASES. Patients confined to bed by a cardiac affection are frequently unable to lie down, and must be provided with a comfortable bed-rest. Their difficulty of breathing is often due to bronchitis (*see BRONCHITIS*), or to collection of fluid in the chest (*see DROPSY*), which requires special and energetic treatment. For breathlessness with lividity, oxygen inhalation is often usefully employed.

BRIGHT'S DISEASE is a term applied to a class of diseases of the kidneys which have as their most common symptom the presence of albumin in the urine, and frequently also the presence of dropsy.

ACUTE BRIGHT'S DISEASE is also known as ACUTE DESQUAMATIVE NEPHRITIS.

An acute attack frequently follows exposure to cold, or arises as a complication of some acute disease such as erysipelas, diphtheria, and especially scarlet fever, of which it is one of the most frequent consequences.

Symptoms.—The symptoms to which the condition gives rise are usually of a severe character, although frequently cases of acute Bright's disease, occurring for example in the

BRIGHT'S DISEASE

course of scarlet fever, are so mild as to escape notice at the time, and only cause trouble when the condition becomes chronic in later life. Vomiting very frequently ushers in the attack, pain in the back of a moderate degree is also a common symptom, and there is frequently slight fever for the first day or two. Dropsy, varying in degree from slight puffiness under the eyes to an accumulation of fluid distending the body cavities and causing serious embarrassment to respiration, is a very common accompaniment. The digestion is almost invariably disordered, the appetite is poor, and the patient is troubled with headache. The urine is reduced in quantity, is of dark, smoky, or blood-stained colour, and, when it is tested, is found to contain a large amount of albumin.

Treatment.—The greatest care must be taken of a person showing for the first time the symptoms of acute Bright's disease, because, although the condition is seldom fatal in a first attack, if it be allowed to pass on to the chronic form, the person must in future live the life of a semi-invalid, or, at all events, is very greatly limited in the extent of his activities. The patient must remain in the equable temperature of bed, carefully protected from all chance of chill, and is usually placed directly between blankets and clothed in woollen garments. It is essential to maintain the free action of the skin, and to this end, in addition to confinement in bed, hot-water bottles, hot-air baths, or hot wet packs which produce free perspiration are administered, particularly if an onset of uræmia threatens. (*See BATHS.*)

Free movement of the bowels is also important in order to help the elimination of waste products from the body and so ease the work of the kidneys. For this purpose either a saline purge is administered every morning, or a dose of some aperient such as com-

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pound jalap powder is administered each night. The diet should be of the simplest type possible. It is a common practice to restrict this for the first week to milk, which should be given to the amount of 3 pints in twenty-four hours, administered as a cupful every three hours. Thin gruel with cream, in about the same quantity, also makes an appropriate diet. Large quantities of water, which have the effect of washing out the effete materials and inflammatory products deposited in the kidney's tubules, are also administered. Various alkaline drinks, such as lemonade, orange-juice, or citrate of potassium in water, or whey, are given for the same reason, and the alkaline constituent of these drinks has a soothing action upon the kidneys. After the first week or ten days it is well to add bread and such starchy foods as boiled rice, sago, arrowroot, or corn-flour to the diet.

When dropsy is a troublesome feature, the abolition of salt from the diet and the substitution of salt-free bread and of potatoes, fresh butter, fruit, and green vegetables for the milk is recommended by some authorities. During the period of convalescence from this disease special care must be exercised in the avoidance of animal food in large quantity, of alcoholic stimulants, and of chills to the surface of the body. A change for a time to a dry, warm climate is often beneficial.

SUBACUTE BRIGHT'S DISEASE is the name applied to that type of the disease in which the acute form is passing off with unusual slowness, or in which the whole kidney is so much damaged that recovery is impossible and the patient is in transition from the acute to the chronic form.

Symptoms.—The patient in this stage becomes pale, bloodless, is particularly prone to dropsy, has much albuminuria, and is often greatly reduced in flesh and strength. The other symptoms of the acute stage,

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such as headaches, also persist or come and go.

Treatment.—Treatment is similar to that for the acute form, but, owing to the patient's weak and bloodless condition, it is generally necessary to increase the amount of animal food in the diet. This is particularly the case when the heart is showing signs of weakness and the dropsy in consequence is tending to increase.

CHRONIC PARENCHYMATOUS BRIGHT'S DISEASE is a form in which degeneration of the secreting cells is the chief feature.

Symptoms.—This stage of kidney disease may have developed quite insidiously, following upon some unrecognised or forgotten attack of acute nephritis, and the patient's attention is frequently called to it by some symptom not directly referable to the kidneys, such as persistent headache or dyspepsia, or dropsy which tends to be present especially in the morning on the face, and to disappear as the day advances. When the urine is examined it is found to contain a large quantity of albumin, and, under the microscope, hyaline and granular casts are found in the deposit. Symptoms connected with the circulation are also frequently found, such as oppression in the chest with palpitation or unduly forcible action of the heart consequent upon the hypertrophy which it has undergone. A person in this condition is liable at any time, as the result of a chill or indiscretion in diet, or from some infection such as a septic throat, to develop a serious attack of acute Bright's disease with uræmic symptoms.

Treatment.—The treatment of chronic Bright's disease, in which the degeneration of the secreting cells is the chief feature, includes particularly medicines directed towards enabling the skin and bowels to overtake as much as possible of the excretory functions of the damaged kidneys, and at the same time to

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lessen the damaging effects which high blood-pressure produces on the heart and blood-vessels and to prevent the occurrence of dropsy. The patient should be well clothed and protected from chills, and he should so arrange his occupation that it is mainly conducted indoors. A change to a warm climate for winter is beneficial in many cases. The use of a daily saline aperient, such as Epsom salts or sulphate of soda, is of great importance. When dropsy is actually present, the patient is treated very much in the same way as in the case of acute Bright's disease. The dropsical fluid often requires to be removed by mechanical means. There is a special tendency to bloodlessness, and for this reason tonics containing some preparation of iron are administered from time to time.

CHRONIC INTERSTITIAL BRIGHT'S DISEASE.—This form of the disease may be the final stage of the last-mentioned type, but it very often also comes on insidiously, and, in a person who has had no special symptoms of acute or chronic Bright's disease, it may be found developed to an advanced form in middle life. The kidney is hard and reduced in size. This type is associated with a general degenerative change in the blood-vessels all over the body combined with increase in size (hypertrophy) of the heart produced by a rise in the general blood-pressure.

Symptoms.—Severe headaches and a general and insidious deterioration in the nutrition of the body leading to increasing thinness form the earliest symptoms of this condition. The patient may also notice that he is passing an unusual quantity of clear, low-coloured urine. The hypertrophy of the heart, leading to palpitation, forcible cardiac action, or a feeling of oppression in the chest, also very often attracts the person's attention. The high blood-pressure which is invariably present in this

BROMIDES

type of the disease leads to interference with the functions of other organs, and indeed the condition of the kidneys may be unsuspected until an attack of apoplexy draws attention to the serious degeneration of the blood-vessels. The blood-pressure may be raised from the normal 130 mm. or thereabouts to 170, 180, or even well above 200 mm. in advanced stages. In this type of Bright's disease the patient is particularly liable to the occurrence of symptoms of poisoning which go by the name of *uræmia* (*see URÆMIA*).

Treatment.—The general treatment which has been outlined for chronic parenchymatous nephritis applies also to this type of the disease, and the patient must take the same care with regard to avoidance of chills and the careful regulation of diet and habits so as to throw as little strain as possible upon the damaged kidneys. Generally speaking, the diet must be specially restricted, and from time to time, when the patient is suffering from symptoms such as headache and dyspepsia to a high degree, he is greatly benefited by confinement for a week or thereabout to bed on a low diet.

Various drugs, such as nitroglycerin, nitrate of soda, and iodide of potassium, are employed to counteract the interference with the circulation and the tendency to apoplexy due to the combination of high blood-pressure and diseased arteries. A similar effect in lowering the blood-pressure is produced by hot baths, which the patient may with advantage take every day, or, if this is proved too weakening, at least two or three times a week.

BROMIDES are salts of bromine. The bromides of potassium, sodium, strontium, and ammonium are used in medicine.

Uses.—Sleeplessness due to mental labour and worry is greatly helped by bromides often combined with other drugs, the dose being 20 grains or

BRONCHIAL TUBES

more at bedtime. Epilepsy and other nervous convulsive affections are treated by long courses of bromide. Bromide is given in small doses for irritable cardiac states like dilatation. It has the disadvantage of tending to produce an eruption, especially about the face, which, however, is lessened when the bromide is combined with a small dose of arsenic.

BRONCHIAL TUBES (see AIR PASSAGES, LUNGS).

BRONCHIECTASIS. (See LUNGS, DISEASES OF.)

BRONCHITIS means inflammation of the mucous membrane of the bronchial tubes. Well known as one of the most common diseases of the climate of Great Britain, bronchitis exists in either an *acute* or a *chronic* form.

(a) **ACUTE BRONCHITIS**, like other inflammatory affections of the chest, generally arises as the result of exposure to cold, particularly if accompanied with damp, or of sudden change from a heated to a cool atmosphere. It may also arise as the result of inhaling irritating dust or vapours. Great numbers of bacteria are commonly found in the expectoration, and the products formed by these are presumably responsible for aggravating the condition.

Symptoms.—The symptoms vary according to the severity of the attack, and more especially according to the extent to which the inflammatory action spreads in the bronchial tubes. The disease usually manifests itself at first in the form of a catarrh, or common cold; but the accompanying feverishness and general constitutional disturbance proclaim the attack to be something more severe, and symptoms denoting the onset of bronchitis soon present themselves. A short, painful, dry cough, accompanied with rapid and wheezing respiration, a feeling of rawness and pain in the throat and

BRONCHITIS

behind the breast-bone, and of oppression or tightness throughout the chest, mark the early stages of the disease. In some cases, from the first, symptoms of the form of asthma known as the *bronchitic* are superadded, and greatly aggravate the patient's suffering. (See ASTHMA.)

After a few days, expectoration begins to come with the cough, at first scanty and viscid or frothy, but soon becoming copious and of purulent character. In general, after free expectoration has been established the more urgent and distressing symptoms abate; and, while the cough may persist for a length of time, often extending to three or four weeks, in the majority of instances convalescence advances, and the patient is ultimately restored to health, although there is not infrequently left a tendency to a recurrence of the disease on exposure to its exciting causes.

The case is very different when the inflammation spreads into, or when it primarily affects the minute ramifications of the bronchial tubes which are in immediate relation to the air-cells of the lungs, giving rise to that form of the disease known as *capillary bronchitis*. When this takes place all the symptoms already detailed become greatly intensified, and the patient's life is placed in imminent peril in consequence of the interruption to the entrance of air into the lungs, and thus to the due aeration of the blood.

Treatment.—With respect to the treatment of acute bronchitis, in those mild cases which are more of the nature of a simple catarrh, little else will be found necessary than confinement in a warm room, or in bed, for a few days, and the use of light diet, together with warm diluent drinks, warm milk being specially beneficial. Additional measures are, however, called for when the disease is more markedly developed. Medicines to allay fever

BRONCHITIS

and promote perspiration, such as the well-known Mindererus spirit, combined with antimonial or ipecacuanha wine, are highly serviceable in the earlier stages. Later on, with the view of soothing the pain of the cough, and favouring expectoration, mixtures containing squill or tolu, with the addition of some opiate, such as the ordinary paregoric (compound tincture of camphor), may be advantageously employed. In children, rubbing the chest with some stimulating liniment such as camphorated oil has a good effect.

In the earlier stages few remedial measures are of greater value than the frequent inhalation of steam. This is accomplished readily enough in the case of adults by the use of an inhaler or simply by breathing over an open-mouthed vessel containing boiling water. In children, in whom this plan cannot be carried out in the same manner, there is in general no difficulty in surrounding them with an atmosphere of steam by erecting over the bed or cot a tent, formed by a screen and blanket, under which can be led the orifice of a tin kettle heated by a spirit-lamp, and provided with a spout 2 or 3 feet long. Various drugs of soothing or expectorant qualities, such as tincture of benzoin, spirit of chloroform and menthol, can also be added to the water in the kettle, or poured upon a sponge which is placed in the end of the spout, and so inhaled in the steam.

When the bronchitis is of the capillary form, the great object is to maintain the patient's strength, and to endeavour to secure the expulsion of the morbid secretion from the fine bronchi. In addition to the remedies already mentioned, stimulants are called for frequently; and should the cough be ineffectual in relieving the bronchial tubes, the administration of an emetic dose of sulphate of zinc, or especially of ipecacuanha wine, often clears out the expectoration when the

BRONCHITIS

patient vomits, and so gives great relief.

(b) CHRONIC BRONCHITIS. —

Causes.—This form of the disease may arise as the result of repeated attacks of the acute form, or it may exist altogether independently. It occurs more frequently among persons advanced in life than among the young, although no age is exempt from it. The usual history of this form of bronchitis is that of a cough recurring during the colder seasons of the year, and in its earlier stages, departing entirely in summer, so that it is frequently called 'winter cough'. In many persons subject to it, however, attacks are apt to be excited at any time by very slight causes, such as changes in the weather; and in advanced cases of the disease the cough is seldom altogether absent.

Symptoms.—The symptoms and signs of chronic bronchitis are on the whole similar to those of the acute form, except that the febrile disturbance and pain are much less marked. The cough is usually more troublesome in the morning than during the day. There is usually free and copious expectoration of a thin frothy fluid. Chronic bronchitis is liable, in some instances, particularly when accompanied with loss of flesh and strength, to be mistaken for consumption.

Chronic bronchitis does not often prove directly fatal, nor is it necessarily inconsistent with long life. Its chief danger lies in the tendency to intercurrent acute attacks, particularly in the aged; and in this manner it very frequently causes death.

Treatment.—The treatment to be adopted in chronic bronchitis depends upon the severity of the case, the age of the patient, and the presence or absence of complications. Attention to the general health is a matter of prime importance in all cases of the disease, more particularly among persons whose avocations entail exposure, and tonics with cod-liver oil will be found highly advan-

BRONCHO-PNEUMONIA

tageous. In those aggravated forms of chronic bronchitis where the slightest exposure to cold air brings on fresh attacks, it may become necessary, where circumstances permit, to enjoin confinement to a warm room, or removal to a more genial climate during the winter months. Counter-irritation of the chest with mustard, turpentine, or croton liniment is generally followed by good results.

In the aged, and in weak persons, stimulants are an indispensable part of the treatment. Acute attacks of the disease, which are so apt to arise in the chronic form, must be dealt with on the principles already indicated in treating of acute bronchitis.

BRONCHO-PNEUMONIA (*see PNEUMONIA*).

BRONCHUS, or bronchial tube, is the name applied to tubes into which the windpipe divides, one going to either lung. The name is also applied to the final divisions of these tubes distributed throughout the lungs.

BRUISES, or **CONTUSIONS**, are more or less extensive injuries of the deeper parts of the skin and underlying tissues, accompanied generally by outpouring of blood from damaged vessels, but unattended by corresponding open wounds.

Treatment of slight bruises consists chiefly in preventing the effusion of blood after an injury by means of cold compresses firmly fixed in position by suitable bandages. Ice may also be applied with good results. If it be not convenient to apply cold, various astringent substances may be used in the form of evaporating lotions kept in contact with the part for eight or ten hours; thus a cloth may be wrung out of Goulard's water and applied to the bruise, or the skin may be painted with hazeline or tincture of arnica. In painful bruises one of the best applications is lead and opium lotion. (*See GOULARD'S WATER*.) The injured part, if a limb, should be elevated in a sling

BURNS AND SCALDS

or on a couch. After the first day or two, when no more effusion will take place, gentle massage away from the bruise towards the body helps absorption and loss of the discoloration. (*See MASSAGE*.)

Mere surface bruises and abrasions are benefited by application of hazeline, or if the skin be much ruffled or ingrained with dirt it is well to apply for a few days a piece of boracic lint in the form of a water-dressing. (*See POULTICES*.)

BRUIT and **MURMUR** are words used to describe several abnormal sounds heard in connection with the heart, arteries, and veins on auscultation.

BUBO means a swelling of a lymphatic gland in the groin in venereal disease or in the plague.

BULB is a term used to signify either the globe of the eye, or, more often, the medulla oblongata or hindmost part of the brain.

BUNIONS (*see CORNS AND BUNIONS*).

BURNS and SCALDS.—Burns are injuries caused by dry heat, scalds by moist heat, but the two are similar in symptoms and treatment.

Severe and extensive burns are most frequently produced by the clothes, for example, of a child, catching fire. This applies especially to cotton garments which blaze up quickly. It should be remembered that such a flame can immediately be extinguished by wrapping the person in a woollen article or simply by laying on the floor so as to lessen the draught of air. Severe scalds are usually produced by escape of steam in boiler explosions.

Symptoms.—For the first two days the chief symptoms are pain, varying with the 'degree' of the burn, and in severe cases the condition of lowered vitality called 'shock'. (*See SHOCK*.) It is said that even superficial burns of as much as one-third of the skin-surface are always fatal. Such conditions as bronchitis, pneumonia and

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pleurisy are apt to develop when the burns are over the chest, and meningitis in the case of burns about the head and neck. Albuminuria is very frequently found owing to congestion of the kidneys. In burns about the face and mouth œdema of the larynx is a dangerous complication accompanied by the risk of suffocation. Later, when the burnt parts slough away there is much suppuration until the gap finally heals. All through this stage there is, in extensive burns, a liability to death from ulceration of the bowels or from general blood-poisoning. Healing is slow, and if the burn is deep, as above stated, there is often terrible deformity.

The danger of burns depends chiefly upon their surface extent and to a less degree upon the depth of the burn. The situation is also very important because burns over the chest, abdomen or head are much more dangerous than larger burns on the limbs. The age is also a matter of importance, because children and old people are more liable to succumb to shock in the early stage of the burn than are adults of full health and strength. At a later stage the presence or absence of septic changes is the most important factor in regard to recovery.

Treatment.—Slight burns are soothed by applying soap or spirit or by running tepid water over the burnt part. For severer burns it is important that any dressings applied should be of such a nature as (a) to relieve pain, (b) prevent septic changes, and (c) aid the healing of the resulting ulcer. If pain is very severe, it may be necessary to inject some soothing remedy such as morphia. The treatment of shock, if it is present, must at this stage be undertaken on the general principles applicable to this condition. (See COLLAPSE.) The clothing must in the first place be carefully removed, the whole of the burned area being gently but thoroughly washed with

BURNS AND SCALDS

a mild, warm, antiseptic lotion, such as warm boracic lotion. By this means the charred clothing is separated. The burn may thereafter be treated on one of three distinct lines: (1) *Dry dressing*.—For this purpose the burn may be thickly powdered with a dusting-powder of starch and boracic acid in equal parts and thereafter wrapped in cotton-wool. This method is very suitable for burns of small size. Another form of dry treatment consists in painting the area with tincture of iodine, which has an action in hardening and drying the burn. A thick layer of wool is applied over the region of the burn. (2) *Wet dressing* is sometimes used for burns, especially of the limbs, either by wrapping the burnt area in strips of lint wrung out of warm boracic lotion which are covered by a mackintosh, or by immersing the whole limb in a bath containing boracic lotion, or water with a little tincture of iodine, maintained at the body temperature. (3) *Oily dressings* are sometimes used, but as they are difficult to remove and are apt to favour septic changes, they should only be employed in the case of small and superficial burns. Such a dressing may be conveniently made of carron oil, which contains lime-water and linseed oil in equal parts with a certain amount of eucalyptus oil for its antiseptic properties. (See CARRON OIL.) No oily application should be used as a first-aid treatment for any burn which is likely to require more expert surgical treatment because of the great difficulty experienced in removing oil when it has once been applied.

At a later stage, when the direct effect of the burning injury has passed away and the burn is a healing ulcer, some simple dressing such as boracic lotion or an ointment spread on lint, such as zinc or boracic ointment, is commonly employed.

Children sometimes scald the mouth and gullet by drinking from the

BURSÆ

spout of a kettle, and for this, tea-spoonful doses of a mixture of cod-liver oil and lime-water, from time to time, give relief.

BURSÆ are natural hollows in the fibrous tissues, lined by smooth cells and containing a little fluid. They are situated at points where there is much pressure or friction, and their purpose is to allow free movement without stretching or straining the tissues, for example on the knee-cap or the point of the elbow, and, generally speaking, where one muscle rubs against another or against a bone.

BURSITIS means inflammation within a bursa. Acute bursitis is of the nature of an abscess, being produced by injury of a bursa, especially on the knee or elbow, when the prominent part of the joint becomes swollen, hot, painful, and red. It is treated as an abscess. (See **ABSCCESS**.)

BUTTER

Chronic bursitis is due to too much movement of or pressure on a bursa. For example, the condition of 'housemaid's knee' is a chronic inflammation of the patellar bursa in front of the knee, due to too much kneeling. This condition may consist in either a collection of fluid in the bursa, or, less frequently, in thickening of its walls, producing in either case an elastic swelling over the joint, with pain. In the former case, rest of the limb, with counter-irritation (see **BLISTERS**) over the swelling, or injection of some irritant substance into its interior, forms the treatment; in the latter case, removal by operation.

Chronic bursitis about the sinews round the wrist and ankle is generally called a 'ganglion'. (See **GANGLION**.)

BUTTER (see **DIET**).

C

CACHET means an oval capsule, generally made of rice-paper, for enclosing a dose of unpleasant medicine. Cachets are softened by moistening with water prior to swallowing.

CACHEXIA is the feeble state produced by serious disease, especially by the growth and ulceration of a cancer.

CÆCUM or **CECUM**, is the dilated commencement of the large intestine lying in the right lower corner of the abdomen. Into it the small intestine and the appendix vermiformis open, and it is continued upwards through the right flank as the ascending colon.

CÆSARIAN SECTION means the delivery of a child by opening the abdomen and womb from in front.

CAFFEINE is a white crystalline substance obtained from coffee, of which it is the active principle. It is identical with theine, the active principle of tea, and similar to creatine, which is found in beef, and gives to beef-tea its stimulating properties. Citrate of caffeine is used as a stimulant to heart and kidneys in 2-grain doses in water. Granular effervescent citrate of caffeine forms a good, non-intoxicating stimulant in headache due to tiredness.

CAJUPUT OIL is a green oil with camphor-like smell, much used for rubbing over diseased and painful joints.

CALAMINE, or **CARBONATE OF ZINC**, is a mild astringent used to soothe and protect the rough and weeping skin in eczema, as calamine lotion or ointment.

CALCANEUM is the name of the heel-bone or os calcis upon which the weight of the body rests in part, and to which the strong sinew of the calf muscles (*tendo Achillis*) is attached.

CALCIFICATION means the process in which tissues are hardened by a deposit of lime salts. This occurs in old scars, as for example in the scars left by healed tuberculosis.

CALCIUM LACTATE is a remedy much used in states of general debility, especially at the menopause. It is sometimes given along with parathyroid extract. The dose is 10 to 30 grains thrice daily.

CALCULI is the general name given to concretions in the bladder or kidney, in the gall-bladder, or in the hands and feet as in gout.

CALLOSITIES are thickenings of the outer skin or cuticle due to pressure or friction. (*See CORNS.*)

CALLUS is the new tissue formed round the ends of a broken bone. It is at first soft, and later converted into new bone.

CALOMEL, or **SUBCHLORIDE OF MERCURY**, is not to be confounded with corrosive sublimate or perchloride of mercury, a far more active drug and deadly poison.

CALORIE, or **CALORY**, is the name applied to a unit of energy. The number of calories required to carry on the processes necessary for life and body warmth, such as the beating of the heart, the movements of the chest in breathing and the chemical activities of the secreting glands, is for an adult person of ordinary weight somewhere in the neighbourhood of 1600 calories. For ordinary sedentary occupations an individual requires about 2500 calories, for light muscular work about 3000 calories, and for hard continuous labour about 4000 calories daily.

CALUMBA ROOT is one of the best pure bitters. (*See BITTERS.*) The dose of infusion of calumba is a tablespoonful in water.

CALX is another name for lime or chalk.

CAMPHOR is a solid, crystalline oily substance distilled from the wood of a species of laurel grown in Japan and Formosa. It is sold in the form of cubes, or in powder known as flowers of camphor.

Externally, it is frequently worn in

CANCER

small bags or placed among bed-clothes to keep off fleas, lice, and other insect pests, and so diminish the risk of certain infectious diseases which these carry. In gout, and various painful skin conditions, it is rubbed up with chloral, menthol, thymol, or salol to form an oily liquid which can be smeared over the surface with great relief. Liniment of camphor and camphorated oil (1 oz. camphor in 8 oz. olive oil) are likewise very useful in painful conditions or as mild counter-irritants to produce a warm glow when rubbed into the chest in bronchitis and similar conditions.

CANCER, CARCINOMA and **SARCOMA** are general names for forms of tumor to which the term 'malignant' is applied, because they destroy the general health, break down the organs in which they grow, after apparent removal tend to grow again, and by rapid spread lead usually to death in some months or years. Cancer or carcinoma is composed mainly of epithelial cells, or cells similar to those of skin or of the mucous membrane lining the stomach and bowels, or of secreting glands; but these cells are imperfect in form and arrangement, although they generally retain their characters sufficiently to allow of the organ from which they have come being recognised when a section of the cancer is examined under the microscope. A sarcoma is a tumor developing in the connective tissue of bones, muscles, sinews, etc. and in structure resembling imperfect connective tissue. Sarcoma is less common than cancer in the proportion of about one case of the former to twenty of the latter; and sarcoma is rather less malignant in its character than cancer, although different forms of both types of tumor vary much in this respect.

Causes.—The cause of malignant growths is still undiscovered. Many theories have been advanced, and, considering the fact that cancer is

CANCER

gradually becoming more frequent, it has become of great importance to establish the nature of the cause as a first step towards prevention and treatment. Much has been done in the last few years by various cancer research laboratories to increase our knowledge as to the distribution of cancer in the animal kingdom and among different races, and also to study the mode of spread and conditions of growth in this disease. It has been found that cancers occur in animals as well as among human beings, and that no race is exempt from the disease.

Several facts, though not to be regarded as direct causes, are important considerations in the origin of the disease.

INJURY.—Smoking a clay pipe has been observed to bring on cancer of the lip, constant alcoholic indulgence to favour cancer of the throat and stomach, while a scar, *e.g.* of an old ulcer, is not infrequently the starting-point. Chimney-sweeps, paraffin workers, and workers in some other special employments have a great liability to cancer of the skin, apparently from long-continued irritation. It has also been found by experiments on animals that the prolonged application of tar to an area of skin may result ultimately in development of cancer. There does not seem any reason to suppose that cancer follows mechanical damage caused by a blow or wound, although there is ground for the belief that sarcoma occasionally follows some severe injury, such as fracture of a bone.

AGE.—Cancer is extremely rare before middle life, the commonest age being between fifty and sixty years. Although cancer is tending to increase in prevalence, there appears from the returns of the Registrar-General for England to be no tendency for the number of persons affected below the age of forty-five years to rise, and cancer is now more a disease of old age than formerly.

CANCER

Sarcoma is commoner in younger persons.

Symptoms.—These vary according to the organs with which the growth interferes, thus a cancer of the stomach tends to cause dyspepsia and, it may be, severe pain; a cancer in the bowels is apt to lead to gradually increasing obstruction, which may produce either diarrhœa or constipation; a cancer affecting the jaw is apt to set up neuralgia; when the growth originates in the womb, flooding is one of the principal early symptoms; when pressure is exercised upon a vein, dropsy results, and so forth. When the growth takes place on the surface there is a hard swelling, which in time is liable to break down and ulcerate. In any case, the growth tends to spread by the lymphatic vessels, and the glands in the neighbourhood soon become affected by secondary growths if the original one be not speedily removed. This applies especially to cancer, and is one reason why cancer is so liable to return after apparently complete removal. Sarcoma tends less to spread along the lymphatic vessels, but occasionally minute fragments are carried away to distant organs in the circulating blood. When a cancer begins to ulcerate by invading the skin or an internal mucous membrane, a state of very bad health and weakness, called cachexia, results. The duration of symptoms of cancer is extremely variable. When the stomach is affected, these seldom last much longer than six months. When the breast is affected, the duration may be very much longer, especially if the main part of the growth has been removed, and life is then frequently prolonged for several years. The same applies to cancer of the rectum, when an artificial opening is made so that the growth is not irritated by the passage over it of intestinal contents.

Treatment.—It should be strongly urged that any person advanced in

CANKER

years finding a hard swelling under the skin should consult a surgeon. In the event of the swelling not being cancer, mental relief will be gained; and if it be cancer, there is at an early stage the chance of the only completely successful remedy at present known, that is thorough removal. The improvement of modern surgical technique and early diagnosis lead now to the possibility of operations which greatly prolong the life of persons affected by cancer, and in some cases permit of permanent recovery. In the case of internal cancers, *e.g.* of the stomach and bowels, attempts at complete removal have not, taking all cases together, attained a great measure of success, but much can be done in the way of operations designed for relief of symptoms which thus prolong life. Much greater success has attended modern operations for complete removal of cancers of the breast and womb.

In inoperable cases much benefit often accrues from treatment by powerful X-ray installations, which are designed so as to concentrate a strong application of the rays upon the deep tissues affected without injuring the skin and superficial parts through which they pass (deep X-ray therapy). Similar favourable results in checking for a long time the growth of such a tumor are also obtained by burying tubes containing radium in the middle of the cancer, which is thereby, to a great extent, destroyed, and the healthy tissues in the neighbourhood stimulated to overcome it. (*See RADIUM and X-RAYS.*)

At a late stage the internal administration of morphia and other sedatives, as well as the application of various antiseptic and soothing dressings, relieves the pain and discomfort of the patient, and life may last for many years.

CANKER is a name applied to small ulcers which form about the mouth and lips as the result of some local irritation, *e.g.*, a jagged tooth,

CANNABIS INDICA

or in a condition of dyspepsia and deteriorated general health. (See MOUTH DISEASES.)

CANNABIS INDICA, or INDIAN HEMP, also known in India as GUNJAH, and in other parts of the East as BHANG and HASHISH, is an Eastern plant having a stimulant, and, in larger doses, a soporific action.

CANNED FOOD.—Food which is preserved in cans or bottles constitutes an increasing part of food supply. Such foods are particularly useful for military and naval use. They also permit of convenience in storage and transport, so that a greater variety of food becomes available than could otherwise be obtained. This particularly suits the convenience of people living in places remote from centres of population and enables them to obtain food at times of the year when fresh articles are unobtainable.

Dangers of canned foods.—The chief danger associated with canned meat, fish, etc., is that of decomposition; while in the case of fruits and vegetables the danger consists in the acids they contain acting on lead contained in the solder or tin plating so as to cause lead-poisoning. It is important, therefore, that all tinned meat should be consumed on the same day that the tin is opened. (See PTOMAIN POISONING.) It is also important to examine the tin for the presence of flaws which may have been produced by rusting or mechanical injury, thus admitting air with bacteria.

CANNULA, or CANULA, is a tube for insertion into the body designed to fit tightly round a trocar, a sharp, pointed instrument which is withdrawn from the cannula after insertion, so that fluid may run out through the latter.

CANTHARIDES, or SPANISH FLY, is a powder made of the body and wings of a dried beetle, which inhabits Spain, Italy, Sicily, and Southern Russia.

CARAGHEEN

Uses.—Its chief use is for blistering (see BLISTERS), and it may be applied as a plaster, in a paste, or painted on in ethereal solution called liquor epispasticus.

CANTHUS is the name applied to the angle at either end of the aperture between the eyelids.

CAPILLARIES are the minute vessels which join the ends of the arteries to the commencement of the veins. Their walls consist of a single layer of fine, flat, transparent cells, united at the edges, and the vessels form a mesh-work all through the tissues of the body, bathing the latter in blood with only the thin capillary wall interposed, through which gases and fluids readily pass. These vessels are less than $\frac{1}{1000}$ inch in width.

CAPSICUM, or CAYENNE PEPPER, consists of small orange-coloured pods containing whitish seeds. It is irritating when applied either internally or to the skin.

Uses.—Externally the powdered pepper is used in an ointment, or in the form of 'Chilli paste', to rub over sprains and bruises, the discoloration of which it helps to remove. Internally, tincture of capsicum is given for some forms of dyspepsia, and is useful (in 15-drop doses before meals) to allay the craving for alcohol.

CAPSULE is a term used in several senses in medicine. The term is applied to a soluble case, usually of gelatine, for enclosing small doses of unpleasant medicine. The term is also applied to the fibrous or membranous envelope of various organs, as of the spleen, liver, or kidney. It is also applied to the ligamentous bag surrounding various joints and attached by its edge to the bones on either side.

CARAGHEEN, or IRISH MOSS, is the name applied to a food-stuff derived from a sea-weed. It is pleasantly soothing and nutritive and is administered in chronic bronchial affections and in diarrhoea and dysentery. Half an ounce of the moss is added to $1\frac{1}{2}$ pints of water and boiled down to 1 pint.

CARAWAY FRUIT

CARAWAY FRUIT, generally called caraway seed, is used to prepare caraway water and caraway oil. A tablespoonful of the former or 2 drops of the latter on sugar is useful for checking colic, griping pains in children, and flatulence.

CARBO is the Latin name for charcoal. (*See CHARCOAL.*)

CARBOHYDRATE is the term applied to an organic substance in which the hydrogen and oxygen are usually in the proportion to form water. Many of the cheaper and most important foods are included in this group, which comprises sugars, starches, celluloses, and gums. When one of these foods is digested, it is converted into a simple kind of sugar and absorbed in this form. In the disease known as diabetes, the most marked feature consists of an inability on the part of the tissues to assimilate and utilise the carbohydrate material.

CARBOLIC ACID, or **PHENOL**, is a coal-tar preparation, first introduced into medicine by Lord Lister some time prior to 1867.

The chief use is external as an antiseptic in operations, and as an application to ulcers and other wounds. (*See ANTISEPTICS, WOUNDS.*) The common strength for external application is carbolic acid 1 part, water 40 parts to 60 parts. As a disinfectant 1 in 20 of water (or 5 per cent) is the convenient strength, and is used to put in the bottom of the sputum-dish of consumptives, to steep the sheets soiled by typhoid-fever cases, to swab the floors and walls of sick-rooms, etc. At the present time lysol is more commonly used for this purpose. In toothache arising from a tooth with a cavity, pain is quieted by a small plug of wool dipped in pure carbolic acid. The pure acid is frequently used to purify and at the same time to soothe the interior of carbuncles and boils after they have been opened. In earache due to boils the ear may be syringed with warm

CARRON OIL

carbolic lotion (1 in 40); or it may be used in the form of ear drops, consisting of 10 grains of carbolic acid in 3 drams of glycerin.

CARBON (*see CHARCOAL*).

CARBONATES OF SODA (*see SODIUM*).

CARBONIC ACID, or **CARBON DIOXIDE**, is the gas formed by the tissues and exhaled by the lungs. In too great quantity in the air it causes death. It is the gas which effervesces from aerated waters and sparkling wines, and is used in baths for stimulation to the skin.

CARBONIC OXIDE, or **CARBON MONOXIDE** (*see COAL-GAS*).

CARBUNCLE means a mass formed by a collection of boils. (*See BOILS.*)

CARCINOMA is another name for cancer.

CARDAMOMS are seeds used to prepare a bright red tincture which is useful to relieve spasm and flatulence and much used to colour medicines.

CARDIA is a term applied to the upper opening of the stomach which lies immediately behind the heart.

CARDIAC DISEASE (*see HEART*).

CARIES is a process of gradual decay in bones or teeth, similar to ulceration in the soft tissues. (*See BONE, DISEASES OF, and TEETH, DISEASES OF.*)

CARLSBAD SALT is the salt derived from Carlsbad water with aperient properties.

CARMINATIVES are remedies which relieve griping and expel flatulence. (*See ANTISPASMODICS.*)

CARPUS is the Latin term for the wrist, composed of eight small bones firmly joined together with ligaments, but capable of a certain amount of sliding movement over one another.

CARRON OIL is a creamy fluid used for dressing burns. It derives its name from the iron-works at Carron in Scotland, where it was first employed as a mixture of linseed oil and lime-water in equal parts. An improved form of carron oil with

CARTILAGE

antiseptic properties is now prepared as follows: lime-water, 10 parts; olive oil, 9 parts; eucalyptus oil, 1 part.

CARTILAGE is a hard but pliant substance forming parts of the skeleton, *e.g.* the cartilages of the ribs, of the larynx, and of the ears.

CASCARA SAGRADA is a bark from which a liquid and a solid extract of powerful purgative action are prepared. It is one of the most useful remedies for habitual constipation, owing to its mild action. The full dose for one administration is a teaspoonful of the fluid extract or about 4 grains of the solid. But it is best taken in small doses of 5 or 10 drops of the fluid extract after each meal, or night and morning; gradually this may be decreased and finally left off, the bowels continuing regular in action. The disagreeable taste may be lessened by mixing the dose with an equal quantity of glycerin, or the concentrated fluid extract may be taken in capsules.

CASCARILLA is an aromatic bitter tonic. (*See BITTERS.*)

CASEATION is a destructive process which takes place in the tissues in tuberculosis and some other chronic diseases.

CASEIN is that part of milk which forms cheese or curds.

CASSIA is a dried pulp which is used as a mild aperient.

CASTOR OIL is a thick colourless oil pressed from the seeds of the castor-oil plant. Owing to its general action over the whole intestine it is perhaps the best purgative for a single administration, though, in consequence of the fact that its action is often followed by slight constipation, it is unsuitable for frequently repeated use.

Its main use is to cause a thorough evacuation of the bowels when there is constipation for some days with resulting headache, languor, indigestion, etc. The dose for an adult is from one teaspoonful to two tablespoonfuls, and it is to be noted

CATALEPSY

that a large dose acts more promptly and produces in general no more griping or purging than a small one, though some persons are very powerfully affected by it. To a child one year old a teaspoonful may be given. Various forms of food-poisoning due to bacilli and dysentery in its early stages are often cut short by castor oil. When given for diarrhoea or griping in adults it may be combined with 20 drops of laudanum, which checks any after-discomfort.

Administration.—The cup in which it is given should be scalded out with hot water, of which a little remains in the bottom; the oil is next poured in, and upon it a little brandy or whisky. The oil may be then swallowed without leaving much taste behind. Lemon juice also helps to remove the taste.

Caution.—Many persons have died through taking a simple dose of castor oil when much more energetic treatment was necessary. It may be said that always when severe pain, vomiting, and stoppage of the bowels are combined, a medical examination, and possibly a surgical operation, are necessary. (*See INTESTINE, DISEASES OF.*)

CASTRATION is the term applied to an operation for removal of the testicle or ovary.

CASTS of hollow organs are found in various diseases. Membranous casts of the air passages are found in diphtheria and in a form of bronchitis, and are sometimes coughed up entire. Casts of the interior of the bowels are passed in cases of mucous colitis associated with constipation, and casts of the microscopic tubules in the kidneys passed in the urine form one of the surest signs of Bright's disease.

CATALEPSY is a term applied to a nervous affection with sudden suspension of feeling and will power, accompanied with a peculiar rigidity of the whole or of certain muscles of the body.

CATAMENIA

CATAMENIA is another term for menstruation.

CATARACT is an opacity of the crystalline lens of the eye more or less completely obscuring vision.

Symptoms.—The first thing noticed is the appearance of motes in the vision, not floating, like those seen by almost every healthy eye against a white background, but stationary.

Bright objects are seen multiplied, especially bright lights at a distance in the dark. A moderate degree of short-sightedness may come on, which is relieved for a time by spectacles. Gradually increasing blindness is the most apparent symptom, and in the early stages the person may be less blind in the dusk than in bright light.

Finally, when the cataract is well advanced, it becomes visible to bystanders as a ground-glass-like mass filling up the pupil.

Treatment.—No medicines or eye-washes or ointments are of any use against cataract. Atropine drops, which dilate the pupil, are much resorted to by quacks, because their use is followed for a time by better vision. The cataract is unaffected by such applications, and can be removed only by operation. A delay of months or years must often take place after sight begins to fail before the cataract is '*ripe*', i.e. before the lens is hardened throughout sufficiently to be completely removed, though many cataracts in old people admit of successful removal by operation even when they are unripe. In all cases the eyes may be freely used so long as it is possible to do so.

Sometimes after an operation for cataract disappointment is experienced because the sight is not restored. In such cases the retina also is diseased, and though the removal of the cataract admits light to the eye, the defective retina is unable to perceive objects clearly. To avoid this the eyes should be carefully examined by an expert before the cataract be-

CATHETERS

comes sufficiently dense to obscure the back of the eye.

CATARRH is a term employed to describe a state of inflammation of the mucous membranes, particularly those of the air passages, associated with a copious secretion of mucus. (See CHILLS AND COLDS.)

The term catarrh is also applied to describe a state of irritation, accompanied by abnormal secretion of mucus, in the stomach (see DYSPEPSIA), in the bowels (see DIARRHŒA), in the bladder (see Cystitis under BLADDER DISEASES), and in other mucous surfaces.

CATECHU is an extract containing much tannin and acting as a powerful astringent.

CATGUT is used in surgery for tying cut arteries and stitching wounds. It is made from the fibrous coat of the intestines of animals, especially of the sheep, requires very careful purification, and in the tissues is gradually absorbed, as it is itself an animal substance.

CATHARTICS (see PURGATIVES) are substances which produce an evacuation of the bowels.

CATHETERS are tubes used for passing along the 'urethra', the narrow passage from the bladder to the exterior, in order to draw off urine, when for some reason the natural voidance is impossible. The tube is about 14 inches long, open at one end (the outer end) and closed at the other (the point), near which is an oval opening in the side (the eye). Catheters are, in England, graduated according to an arbitrary scale, numbers 6 to 10 being those in most common use.

Varieties.—*Rigid* catheters are generally made of silver, silverised metal, or glass; the greater part is straight, but there is a curve towards the point. These require for use a considerable knowledge of anatomy, and since great damage may be done by unskilful manipulation they are suited only for a surgeon's use. A rigid

CATHETERS

catheter may often be passed where a softer one fails, especially where there is a 'stricture', or narrowing of the urethra. *Flexible* catheters are made of linen or silk web covered with an elastic material, or of hard black rubber. They soften in hot water, but are spoiled by boiling. This form (gum-elastic catheter) is that generally used by those elderly persons in whom the prostate gland blocks the outlet from the bladder. *Enamel* catheters are made of fabric thickly coated with composition and may be boiled for sterilisation. These have to a great extent displaced the flexible catheters formerly used. *Soft* catheters are made of red india-rubber. They are used in cases where there is no obstruction to the passage, but where the urine, owing to weakness or paralysis of the bladder, for example, in cases of fractured spine, cannot be passed. They can be easily purified, as they do not spoil by boiling. *Self-retaining* catheters are made of soft rubber with an enlargement near the inner end which expands when the stilet, on which the catheter has been introduced, is removed.

Use.—Purification is most important, because inflammation of the bladder is very apt to be caused by bacteria introduced on a soiled catheter. Rigid and soft catheters should be boiled each time before use, and then handled as little as possible, and only by perfectly clean hands. Just before introduction the urethral opening is washed and the point of the catheter dipped in an antiseptic lubricant, such as boracic ointment or antiseptic jelly. The flexible catheter is passed straight on, the soft catheter introduced by a slight screwing movement. After use the catheter is dipped at once into hot water and then wiped clean of grease, and a stream of antiseptic lotion is passed through it by means of a syringe. To keep a gum-elastic catheter clean and ready for use it

CEREBELLUM AND CEREBRUM

should be suspended in, or laid full length in, a glass vessel containing perchloride of mercury lotion (1 in 4000), which is washed off the catheter immediately before use with hot sterile water. But perchloride of mercury lotion must not touch a metal catheter, which it corrodes. A catheter must be at once discarded when it gets rough or begins to break, otherwise a fragment may remain in the bladder and provide a nucleus round which a stone can form.

CAUSTICS and CAUTERIES are bodies used to burn diseased tissues, the former by chemical action, the latter by their high temperature.

CAVITY.—There are three great cavities of the body: those of the head, the thorax or chest, and the abdomen. The head and abdomen are each lined by a smooth membrane, which allows of movements of the contained organs, while the thorax has three such membranes enveloping the heart and right and left lungs respectively. Cavities are also produced in various organs by diseases of a destructive type. (*See ABSCESS and CONSUMPTION.*)

CELLS are the microscopic particles which build up the tissues, of which they are the smallest structural divisions.

CELLULAR TISSUE is an old name for the loose fibrous tissue, which forms, so to speak, packing between the skin and muscles and round the different organs.

CELLULITIS means an inflammation taking place in cellular tissue. (*See ABSCESS and ERYSIPELAS.*)

CERATE is a medicinal preparation, intended for external application, made with a basis consisting of wax.

CEREAL is the term applied to any plant of the nature of grass bearing an edible seed, such as wheat and oats. Cereal foods consist mainly of carbohydrates.

CEREBELLUM and CEREBRUM (*see BRAIN*).

CEREBRO-SPINAL FEVER

CEREBRO-SPINAL FEVER is another name for cerebro-spinal meningitis. (*See under* MENINGITIS.)

CERUMEN is the Latin name for the wax-like secretion found in the external ear.

CERVICAL means anything pertaining to the neck.

CHAFING OF THE SKIN occurs in infants at the natural folds, *e.g.* groins, armpits, elbows, where two moist surfaces constantly rub one another; in stout elderly people at similar positions; and generally where the clothes cause friction or pressure, as in the armpits or on the feet of those who walk great distances.

Treatment.—In infants the folds in the skin should be kept specially clean by washing with warm water and superfatted soap, carefully dried, and then dusted with fuller's earth or any dusting-powder, such as a mixture of starch, zinc oxide, and subnitrate of bismuth in equal parts.

Chafing beneath the breast, etc., is treated by similar careful washing, drying, and dusting, with, in addition, suitable support and separation of the skin surfaces by dry wool or a fold of boric lint.

Chafing by the clothes may generally be cured by drying and dusting with the above powder, or with one of boric acid and starch in equal parts, or by sponging the skin twice or thrice daily with strong spirit.

Chafing of tender feet, or 'foot soreness', may be prevented or treated as follows:

(a) Boots should be thick-soled, sound, and for some weeks before a long march should be softened by repeated greasing or by soaking in castor oil.

(b) Absolute cleanliness of the feet is essential, and for some days before a march they should be hardened by bathing twice daily in water containing alum (a handful to a pail of water) or potassium permanganate (dark red colour), or other hardening agent like weak chromic acid or weak formalin.

CHAULMOOGRA OIL

(c) Socks should be dusted with French chalk or other powder, and a clean pair should be carried for changing.

(d) At the end of each day's march any blisters should be pricked, though the white skin is not to be removed; and reddened areas should be washed with potassium permanganate solution, dried, sponged with strong spirit, and dusted.

CHALK (*see* LIME).

CHALK-STONES (*see* GOUT).

CHALYBEATE tonics or waters are those containing salts of iron.

CHAMOMILE TEA is made by infusing half an ounce of dried chamomile flowers in half a pint of boiling water for fifteen minutes and then straining. It is used cold in wine-glassful doses.

CHAMPAGNE (*see* ALCOHOL).

CHANGE OF LIFE (*see* CLIMACTERIC and MENSTRUATION).

CHAPPED HANDS (*see* CHILBLAINS).

CHAPPED LIPS (*see* LIPS).

CHAPPED NIPPLES (*see* BREASTS).

CHARCOAL, or CARBON, is obtainable in two forms, bone-charcoal and wood-charcoal.

Dry charcoal may be laid on plates about a sick-room to destroy bad smells, but this is better effected by thorough ventilation. It forms a good application in poultices to foul ulcers, the charcoal being sprinkled dry on the surface of a linseed poultice. Internally it is given in 20- to 60-grain doses by cachets, or in charcoal biscuits, to relieve that form of dyspepsia associated with flatulence, and must be taken dry. It is sometimes used in filters and for tooth powder, though it is unsuitable for either purpose.

CHAULMOOGRA OIL is a volatile oil obtained from the seeds of an Asiatic shrub, and used in cases of leprosy. The oil is both applied externally and given internally or by intravenous injection mixed with olive oil.

CHELOID

CHELOID is a peculiar sort of tumor formation starting in scars, especially in those of burns. It consists of an overgrowth of scar tissue.

CHELSEA PENSIONER (*see CONFECTIONS*).

CHEST, or **THORAX**, is the upper part of the trunk. It is enclosed by the breast-bone and rib-cartilages in front, by the twelve ribs at each side, and by the hinder parts of these along with the spinal column behind. Above, it is continued by an opening a few inches wide, through which pass the windpipe, gullet, and large blood-vessels, into the root of the neck; while, below, its cavity is separated from that of the abdomen by a thin dome-shaped plate of muscle, the diaphragm or midriff.

Contents.—The chest contains the lungs, one at each side, with the end of the windpipe, which divides into right and left bronchial tubes, to the two lungs; the heart in the middle and projecting on the left almost to the nipple, with the great vessels which carry blood from and to it; the gullet, which passes down on the left side of the spinal column to enter the abdomen through an opening in the diaphragm; the thoracic duct of the absorbent system, which runs up to enter a vein in the neck; and various important nerves which control the contained organs. Each lung is enclosed in a smooth, double membrane, the pleura, and the heart in a similar membrane, the pericardium.

CHEST, DEFORMITIES OF.—The walls of the chest, being to a great extent rigid, exert a very important influence over the health of the contained organs, and since changes in shape and size of these organs can, on the other hand, produce gradual changes even in the rigid walls, these deformities are of great importance in the indication of internal disease. The healthy chest is gently rounded all over, its contour being still more rounded in women by the breasts, and in transverse outline it should

CHEST, DEFORMITIES OF

present an oval shape slightly flattened behind and having a proportion of about 10 to 7·5 between its side-to-side and front-to-back measurements. The circumference varies from 33 inches for a man of 5 feet in height to about 40 inches for a man of 6 feet.

The chief deformities are the following:

Long chest is one in which the shoulders slope downwards, the ribs incline downwards as they come forwards more than they should do, the lower ribs touch or almost touch the haunch-bones, and the circumference is small.

Flat chest is often a consequence of lung diseases, and flatness is sometimes found along with too great length.

Barrel chest is one in which the ribs are too horizontal, the shoulders raised, and the chest short. It is the opposite in every respect of the 'long chest'. This form is due to too great expansion of the lungs in the disease called emphysema, following asthma. The chest being blown out almost to its full capacity at expiration, inspiration is made very laborious.

Rickety chest is due to rickets in early life, and usually the head and other bones are also affected. (*See RICKETS.*) There is a hollow down each side owing to the yielding of the soft growing ribs in early life under the pressure of the atmosphere.

Pigeon breast is one in which the cross-section of the chest becomes triangular, the breast-bone forming a sort of keel in front, like that in the pigeon's breast. It is apt to result from adenoids in early life.

Bulging of the chest may be due to curvature of the spine, which makes a projection behind, and consequently, the chest being shortened, causes the breast-bone to bend on itself and project in front. When the spine twists to one side, that side becomes flattened, the other side bulging and

CHEST DEVELOPMENT

the contained organs being pushed into it.

Hollowing of the chest is found in many conditions. In consumption, when the lung becomes chronically solidified in its upper part, and later develops a cavity, it shrinks, and the chest wall to some extent falls in beneath the collar-bone.

CHEST DEVELOPMENT is of great practical importance in view of the fact that persons with 'long' and 'flat' chests undoubtedly suffer more often from serious lung disease than those who have good chest capacity. The art of full breathing also confers a feeling of exhilaration upon those who practise it, and adds ease to the carriage of the body. Many persons, debarred from entering one of the public services through having too small a chest circumference, owe this largely to a faulty manner of carrying the chest, the ribs being allowed to droop and the shoulders to slope downwards and forwards, although one or two inches might be added to the girth in a few days or weeks by proper exercises.

The following exercises, carried out night and morning, help towards this:

(a) The person standing erect holds the hands in front of him, backs upwards, on a level with his hips. As he begins to breathe he raises them till, at the end of an inspiration, they are straight above his head. As he breathes out he lets them slowly fall to their former position. This he repeats with each breath, making the breaths as deep as possible.

(b) Standing with the hands by the sides, palms forwards, he raises them away from the sides as he breathes in, to the same position as in the first movement, and lets them descend slowly outwards as he breathes out.

(c) Standing with elbows bent, the thumbs pressed against the upper part of the chest, and the finger-tips of opposite hands touching, he carries the arms outwards and as far back-

CHEYNE-STOKES' BREATHING

wards as possible, keeping them always on a level with the shoulders, as he draws a deep breath, and brings them forwards again as he breathes out.

Further, the person should cultivate the habit of breathing deeply at all times, and of standing, sitting, or walking with the shoulders well braced back, so as to take the weight of the shoulder blade and upper limb off the expansile part of the chest.

CHEST DISEASES (*see* LUNGS, DISEASES OF; HEART DISEASES, ANEURYSM, ANGINA PECTORIS, PLEURISY, PNEUMONIA, BRONCHITIS, CONSUMPTION).

Chest diseases are of special importance, because the lungs and heart are perhaps the most important organs in the body, and are especially difficult to treat, as these are the only organs which cannot rest for a few minutes without death becoming imminent. Further, they are so closely placed and so intimately associated by the circulation of the blood, that when one suffers from disease, either acute or chronic, the other is rarely unaffected.

CHEST INJURIES.—Injuries due to moderate violence are not usually serious, resulting generally in muscular bruises or in fractured ribs. If the ribs do not penetrate the lung, union and recovery are rapid, but, if the lung be injured, various complications, such as effusion of blood and entrance of air into the pleural cavity, abscess in the lung, pneumonia, etc., may ensue. Penetrating wounds of the lungs, as by a bullet or stab, are apt to lead to similar complications, but do not necessarily produce serious effects unless a large vessel be severed. Simple fractures of ribs may be serious in old people, and bronchitis often follows their occurrence. Wounds of the heart are generally at once fatal from hæmorrhage.

CHEYNE-STOKES' BREATHING is a type of irregular breathing seen in some serious nervous affections and also in the case of persons very much

CHICKEN-POX

weakened by other diseases. When well marked it is a sign that death is impending.

CHICKEN-POX, or **VARICELLA**, is an acute contagious disease of children, characterised by feverishness and an eruption on the skin.

Causes.—The disease occurs in epidemics affecting especially children under the age of ten years. It has no connection with smallpox, to which it bears a superficial resemblance. Although one person seldom suffers twice from chicken-pox, yet chicken-pox gives no protection from smallpox or *vice versa*. Vaccination also gives no protection against chicken-pox.

Symptoms.—There is an incubation period of twelve to twenty days after infection, and then the child becomes feverish or has a slight shivering, or may feel more severely ill with vomiting and pains in the back and legs. Almost at the same time, and at all events within twenty-four hours, an eruption consisting of red pimples which quickly change into vesicles filled with clear fluid appears on the back and chest, sometimes about the forehead, and less frequently on the limbs. These vesicles during the second day may show a change of their contents to turbid, purulent fluid and within a day or two they burst, or, at all events, shrivel up and become covered with brownish crusts. In a slight case there may be only eight or ten of these vesicles, or there may be several hundreds. The small crusts have all dried up and fallen off in little more than a week and recovery is almost always complete.

Treatment.—The child must be isolated from other children until the last crust has disappeared, and may then be washed and go about as usual. A patient need not be confined to bed unless the temperature is raised, but he should be kept in one room. If the rash appear on the face, care must be taken to prevent scratch-

CHILBLAIN

ing, or pock marks may remain. A lotion of calamine or of carbolic acid, or a simple dusting powder, relieves the itchiness. No other treatment beyond isolation is required. If children have been exposed to the risk of infection, it is usual to isolate them for a period of twenty days before allowing them to return to school.

CHILBLAIN is an inflamed condition of the skin of hands or feet, or even of the ears, occurring in persons of defective circulation and in those of poor health.

Chilblains are found especially in weakly children in winter time. Under-feeding, poor clothing, and a defective circulation favour their appearance. Persons who suffer from them have habitually cold and numb hands and feet, and are subject to chills and colds in the head. In these persons, tight boots often are sufficient to bring on chilblains of the feet, and warming the hands at the fire when they are cold produces chilblains on the fingers, the skin becoming engorged with blood in consequence of the irritation or warmth, and later losing its vitality.

Treatment.—Preventive treatment is the best. Good food, tonics, and warm clothing improve the general condition upon which chilblains depend. Regular exercise and a cold or modified cold bath every day (*see* **BATHS**) improve the circulation. The person liable to chilblains should wear wide boots and thick woollen socks in winter, and, before going into the open air, should always pull on a pair of woollen gloves. Garters and constrictions round the wrist or ankle, which interfere with the circulation, should be abolished, and india-rubber shoes should not be worn. If the hands and feet are cold they should be rubbed for warmth, not held before the fire. In the first stage the chilblain may be rubbed with hazeline snow or cream, or painted with tincture of iodine.

CHILD-BED

Voyagers to the Arctic regions rub the part with a mixture of whisky and soap, which is very effective. When the surface of the skin is broken, some simple ointment like boracic and a dressing of wool are best, or the part may be painted with compound tincture of benzoin. Lactate of calcium, taken internally, is also useful.

CHILD-BED (*see* LABOUR).

CHILDREN, FEEDING OF (*see* INFANT-FEEDING).

CHILDREN, PECULIARITIES OF.

—The fact that children cannot put into words, or cannot correctly estimate the nature of troubles and pains from which they suffer, coupled with the great importance of remedying as early in life as possible any physical or mental defect, or any bad habit, makes the observation of their peculiarities of great importance.

Activity.—For some weeks after an infant is born the only signs of intelligence, apart from the performance of the merely animal functions, consist in *constant movements* of the lips, head, and limbs. The fingers are constantly opened and shut, the legs drawn up and down, and the lips pouted, while the child is awake; and the vigour of these movements gives a good idea of the vitality of the child and a general index of its future brain power. At about the third or fourth month the child should begin to develop the power of attention, as shown by its staring fixedly at any bright or moving object presented to it and ceasing other movements while its attention is so engaged. During the sixth month teething, with the various disorders of the alimentary canal, skin, etc., incidental to it, begins. A delay in teething is one of the signs of rickets. (*See* TEETH.) About the end of the first year of life the child should be gradually gaining the power to stand and walk.

Crying in early childhood is the great manifestation of pain. The

CHILDREN, PECULIARITIES OF

most common pain is that known as 'gripes' and associated with indigestion, in which the cry is of a wailing character, with a note of ill-temper. (*See* COLIC.) In head pain the cry is of a sharp, piercing nature. In older children frowning is a common symptom of headache, especially when it is due to eye-strain. (*See* VISION, DISORDERS OF.)

Temperature is not much of a guide to disease in children, because the temperature-regulating mechanism is easily thrown out of gear, and a severe whipping may send up the temperature to 103° Fahr., for several hours.

Fullness under the eyes, disappearing when the child smiles, indicates a lax condition of the facial muscles, and may be due to tiredness, or, if it be habitual, to a weak general condition. Fullness, however, which is lasting, and so great as partially to close the eyes, and which is increased after sleep, is usually a symptom of Bright's disease, for which treatment should be sought without delay. (*See* BRIGHT'S DISEASE.)

An open mouth in breathing, especially when deafness and shortness of breath accompany it, is usually due to enlargement of the tonsils and adenoids in the throat. A child so affected is generally found to snore when asleep. (*See* NOSE, DISEASES OF.)

Accompanying these symptoms in older children we find broadening of the bridge of the nose, narrow nostrils, and often narrowing of the roof of the mouth with projecting front teeth.

The expression of the face is often of great importance. Deep hollowing of the eyes during an attack of summer diarrhoea and vomiting is a grave sign, indicating great exhaustion. The size of the cranium is large in children compared with that of the face. At birth the proportion is about eight to one, though the face rapidly grows in size. On the top of

CHILDREN, PECULIARITIES OF

the head is the 'fontanelle' or soft spot, which is at birth about a square inch in size, and gradually closes as the bones grow till, at the end of the second year, it should have disappeared. Premature closure, with narrowing of the forehead, is often, though not necessarily, associated with mental deficiency. Late closure, with the development of a lofty 'intellectual'-looking forehead, is one of the signs of rickets.

Bad postures in children, such as standing on one leg, stooping at the shoulders, and leaning the left elbow on the table at lessons, should be discouraged as tending to produce deformities. The latter habit may produce considerable curvature of the spine and defective development of one side of the chest in a few months.

Nervousness may show itself by twitching movements of hands and feet, and a shy, nervous child is apt to be unintentionally clumsy. Twitchings and grimaces very often show the beginning of St. Vitus's dance, and children are apt to be punished for these quite involuntary peculiarities, such punishment only aggravating the condition. Grinning on every occasion, however, shows a want of control over the muscles of expression, and indicates a low-class brain and necessity for careful upbringing. Convulsions in young children are due to many causes (*see* CONVULSIONS), and when some nervous disease is the cause they form a serious symptom. Although much more common in children, they are not by any means so grave as fits of similar severity in adults. Incontinence of urine, showing itself generally by wetting of the bed, may be a bad habit in a nervous child and capable of correction by punishment or by careful treatment, but often it is a sign of the need for circumcision, and is cured by this slight operation.

Bad habits in children include such actions as persistent sucking of the thumb or tongue, biting the nails,

CHILDREN, PECULIARITIES OF

rolling or nodding the head in a rhythmic manner, knocking the head violently on the pillow, rhythmic swaying of the body, eating of dirt, etc. These habits all consist in a morbid exaggeration of some normal action which has an extraordinary fascination for the children who practise it. All these habits are the counterpart of hysteria in older people, and children who practise them frequently develop hysterical symptoms later. It is very important, therefore, that these should be corrected at an early stage by checking the child and making him carry out some other activity on each occasion when the habit is noticed.

Left-handedness is often taken for a sign of stupidity, and children are punished when they do not use the right. This is a great mistake, because the child may be taught to do certain things with the right, and so attain a condition of ambidexterity.

The teaching of children should not be forced before the age of seven, and up to this age should be directed rather to teaching habits of orderliness and regularity. The teaching of good habits should begin at birth. This may be done, for example, in the matter of feeding. The periods at which the child is to be fed having been determined, these should be rigidly adhered to, despite the child's crying. It is astonishing how soon the child accepts this discipline and ceases to cry for food at irregular times. Present-day teaching in the kindergartens and primary schools is directed towards instructing children how to observe and study rather than towards cramming them with facts. After the age of seven is reached, the child's brain is quite capable of enduring some fatigue, and regular lessons should be begun, or the child will learn idle, loafing habits. It is a common mistake of parents to encourage 'smartness' which shows itself in readiness of repartee and ability to repeat the sayings of others

CHILLS AND COLDS

in a parrot-like fashion, for this indicates an impressionable and unstable brain. A much more hopeful sign is a certain amount of slowness in answering questions, which indicates power of thought. (*See also SCHOOL CHILDREN and MENTAL DEFECTIVENESS.*)

Sleep should be longer the younger the child, and nervous children should have a specially good allowance. The following table gives approximately the minimum periods of sleep at different ages :

	Hours a Day
During first year	20
During second year	14-16
From second to fourth year	12-14
From fourth to sixth year	10-12
From sixth to twelfth year	10
From twelfth to sixteenth year	9

CHILLS and COLDS form a subject of some importance because, although, in general, trivial ailments, they are often the prelude to serious diseases.

Causes.—A cold follows generally some chill to the surface, such as exposure to a draught of cold air, breathing in a foggy atmosphere, wetting of the feet on a cold day, sudden immersion in water, etc., some persons being specially liable after one of these to develop a catarrh of the respiratory passages and feverish state. In other cases errors in diet seem either to bring on the same condition or to assist the effect of cold. Often a 'cold in the head' runs through all the members of a family or school or a group of persons employed together, and such an 'infectious cold' is due to bacteria passed from one person to another by sneezing or coughing.

Varieties and symptoms.—A cold in the head with catarrh of the nose is known to every one; the catarrh sometimes extending up into the frontal sinuses and causing a severe browache, or involving the maxillary sinuses (*see ANTRUM*) and causing faceache, or even spreading up the

CHILLS AND COLDS

Eustachian tubes and causing inflammation of the middle ear with painful earache. Generally these secondary affections disappear as the cold gets well, but suppuration may result in these various cavities, most commonly in the middle ear, though seldom in the frontal sinus. When the throat is the part affected, inflammation of the tonsils or 'quinsy' is liable to result, especially in rheumatic persons. In persons who use the voice much, or in those who indulge overmuch in alcohol, the larynx is a weak point, and laryngitis, with huskiness or even temporary loss of voice, is the common result of a chill. The cold may affect the respiratory passages farther down and bronchitis then results, or if the surfaces of the air spaces in the lungs be inflamed, pneumonia is produced. Some persons have a liability, as the result of a chill, to catarrh not of the respiratory, but of the alimentary system, as shown by ensuing dyspepsia or diarrhoea. It should be remembered that a so-called 'cold' is the commencement of several infectious and serious diseases, such as measles, whooping-cough, influenza, consumption, and, with regard to the latter especially, one should seek medical advice and examination whenever this apparently trivial malady lasts more than a few weeks.

Treatment.—A cold which affects only the nose and is accompanied by much discharge may, at its commencement, be relieved by using one of the solutions mentioned under GARGLES. The sense of stuffiness that accompanies a cold in the head may be relieved by rubbing the sides of the nose *downwards* for ten minutes night and morning with lanoline. In children, a favourite household remedy for feverish colds is tincture of aconite, but it must be remembered that this is a very potent drug. A cold may often be got rid of at its commencement by a hot bath at bedtime, followed by warm drinks or a Dover's powder (10 grains) to

CHINCOUGH

produce perspiration, and a rest of twelve hours or so in bed. The best warm drinks for this purpose are hot lemon-squash, or whisky in hot water or hot milk; or their place may be taken by a tablespoonful of Mindererus spirit, or a teaspoonful of sweet spirits of nitre, in water, at bedtime. Instead of a hot bath, one may steep the feet for five or ten minutes in water as hot as can be borne, to which have been added two tablespoonfuls of mustard, mixed first of all with cold water.

For a feverish cold with slight cough, ammoniated tincture of quinine in doses of one teaspoonful twice or thrice in the day, taken in a wine-glassful of water, forms a popular and very useful remedy.

When there is quinsy, or rheumatic pain, salicylate of soda and phenacetin (10 grains of each) may be taken with advantage. In all inflammations of the throat, oily applications, such as camphorated oil and a flannel bandage to the neck, do much good. When there is a threatening of bronchitis, with sense of oppression in the chest, poultices or mustard leaves to the front of the chest (*see* BLISTERS AND COUNTER-IRRITANTS) together with an inhalation of a teaspoonful of compound tincture of benzoin from hot water (*see* BALSAMS), give much relief. In all these internal catarrhal conditions, heavy eating must be avoided, but soothing fluids, such as warm gruel, or milk and water, are very serviceable. In the very young and very aged, colds form a serious illness, and medical advice should be sought early, in case the trouble should assume a serious complexion in bronchitis or pneumonia.

CHINCOUGH is another name for whooping-cough. (*See* WHOOPING-COUGH.)

CHIRETTA, or **CHIRATA**, is a favourite bitter, resembling gentian. (*See* BITTERS.)

CHLORALAMID is crystalline powder with faintly bitter taste which is generally regarded as a very

CHLORINATED LIME

safe hypnotic, and is used for producing sleep in cases of neuralgia, hysteria, and cardiac disease. It is given in doses of 15 to 45 grains.

CHLORAL HYDRATE is a clear, crystalline substance, with sweetish taste, which dissolves rapidly in water. When taken internally in moderate doses it produces sound, dreamless, refreshing sleep, like natural sleep. It is, however, dangerous in large doses, and persons taking it frequently are very liable to contract a habit for it. In safe doses it does not lessen pain appreciably, as opium does, and so will not cure sleeplessness due to this cause.

It is given in doses of 10 to 20 grains, or in the form of syrup of chloral, a teaspoonful, but for the reasons mentioned above, should never be taken but under medical observation.

CHLORETONE is a white crystalline powder with an odour resembling camphor. Applied to the surface of the skin or mucous membrane it has a soothing and antiseptic effect, and internally it acts as a hypnotic. It is chiefly used as a mild internal antiseptic and also as a remedy for sea-sickness in doses of 5 to 20 grains.

CHLORIC ETHER is an old name for spirit of chloroform.

CHLORIDE OF SODIUM is the chemical name for common salt.

CHLORIDE OF ZINC is the main constituent of Burnett's disinfectant.

CHLORINATED LIME, generally known as **CHLORIDE OF LIME**, is a powerful bleaching agent and disinfectant, especially when mixed with an acid.

To disinfect rooms, chlorinated lime may be mixed with an equal bulk of water acidulated with sulphuric acid, and exposed on flat dishes for some hours.

To disinfect water-closets and drains, 1 lb. of the chlorinated lime may be mixed with a gallon of water and poured down the drain.

For an inhalation, 2 ounces of

CHLORODYNE

chlorinated lime are put in an inhaler moistened with cold water, and the chlorine vapour which is gradually given off inhaled. This is useful in suppurating sore throat.

CHLORODYNE is a proprietary soothing remedy said to contain chloroform, hydrocyanic acid, morphine, capsicum, and Indian hemp.

CHLOROFORM is a colourless, mobile liquid, half as heavy again as water, and, unlike ether, non-inflammable.

Internally its chief use is by inhalation to produce insensibility to pain during surgical operations, in painful and convulsive diseases such as gall-stone colic, and during child-birth. Spirit of chloroform is a very frequent ingredient of cough and digestive mixtures, for its stimulating and soothing effects upon the interior of the stomach and bronchial tubes.

CHLOROSIS is a form of simple anæmia which receives its name from the yellow or faintly greenish-grey complexion of those suffering from it. (See ANÆMIA.)

CHOCOLATE is a solid substance made by grinding cocoa nibs to powder and mixing with a large amount of sugar and some flavouring substance, such as vanilla. It consists, roughly, half of sugar, starch, and protein, and half of a fat known as cocoa-butter, with small quantities of water and salts, and about 1 per cent of theobromine, an alkaloid of stimulating properties similar to those of tea and coffee. It forms a compact and easily carried food, suitable for sustaining hard labour and for protecting against cold.

CHOKE-DAMP (*see* DAMP).

CHOKING is the process which results from an obstruction to breathing situated in the larynx. (See AIR PASSAGES.) It may occur as the result of disease causing swelling around the 'glottis' (the entrance to the larynx), or of some nervous disorders that interfere with the regulation of the muscles which open and

CHOLECYSTITIS

shut the larynx, but generally it is due to the irritation of a piece of food or other substance introduced by the mouth, which provokes coughing but only partly interferes with breathing.

Treatment.—If coughing be vigorous the choking person should be let alone, a glass of water being put within his reach, because a gulp of cold water often dislodges the particle, and, at all events, stimulates more vigorous coughing. The choking person should take slow, deep inspirations, which do not force the particle farther in (as sudden catchings of the breath between the coughs do), and which produce more powerful coughs. If the coughing be weak, one or two strong blows with the palm of the hand over either shoulder blade, timed to coincide with coughs, aid the effect of the coughing. In the case of a child the patient may be held up by the legs, when the substance causing the obstruction is more readily dislodged. Finally, if the coughing be getting weak, lividity of the face and finger-nails coming on, and especially if unconsciousness have supervened, death is imminent within a few minutes unless the obstruction be removed. For this purpose the bystander should pass his right forefinger along the side of the patient's tongue, forcing the teeth apart first, if necessary, with a knife handle, and keeping them apart by the fingers of the other hand with a napkin rolled round them. The forefinger should be passed as far down the throat as possible, its point then turned towards the middle line and hooked forwards towards the root of the tongue. After a few attempts the foreign body will very likely be dislodged and pulled up into the mouth.

CHOLAGOGUES are substances which increase the flow of bile.

CHOLANGITIS is the term applied to inflammation of the bile ducts.

CHOLECYSTITIS means inflammation of the gall-bladder.

CHOLELITHIASIS

CHOLELITHIASIS means the presence of gall-stones.

CHOLERA.—Two distinct forms of disease are included under this general term, namely, simple cholera, or summer diarrhœa, and Asiatic cholera. Although essentially different as to their causation, these two diseases may in individual cases present many symptoms of resemblance. For treatment *see* DIARRHŒA.

CHOLESTERIN, or **CHOLESTEROL**, is a substance derivable from many tissues of the body, from fat, blood, tumors, and several secretions such as the bile.

CHOREA is the technical name for St. Vitus's dance. (*See* ST. VITUS'S DANCE.)

CHOROID, or **CHORIOID**, is the middle of the three coats of the eye, and consists chiefly of blood-vessels, which effect the nourishment of this organ. (*See* EYE.)

CHOROIDITIS, or **CHORIOIDITIS**, means inflammation of the choroid coat of the eye, and is sometimes associated with inflammation of the iris. (*See* EYE, DISEASES OF; and IRITIS.)

CHROMIC ACID is a caustic much used in small operations on the nose and throat. It is also used in weak solution (1 in 20 of water) to harden the skin of the feet.

CHRONIC DISEASES are those which last a long time, or which progress very slowly. Many diseases are essentially chronic, such as locomotor ataxia; others have both acute and chronic forms, for example tuberculosis and gout.

CHRYSAROBIN, or **GOA POWDER**, is a substance got from Brazil. It is used in various skin diseases, such as psoriasis.

CHYLE is the name given to the partly digested food as it passes down the small intestine, and also to that part of it which is absorbed by the lymphatic vessels of the intestine.

CHYME is the name given to the

CIRCULATION OF THE BLOOD

partly digested food as it issues from the stomach into the intestine.

CICATRIX is another word for scar.

CIDER is an alcoholic beverage made from apples. As cider contains a considerable amount of fruit acids which are converted in the body into alkaline substances, it is much used as an antacid by persons with a rheumatic tendency. (*See also* COLIC.)

CINCHONA is the general name for several trees in the bark of which quinine is found.

CINNAMON is the bark of a species of laurel grown in Ceylon. It has a stimulating action upon the stomach, and assists digestion, hence its use as a condiment. It is also an antispasmodic.

CIRCULATION OF THE BLOOD.—

The course of the circulation is as follows. The veins coming from the upper parts of the body, as well as those from the lower limbs and abdomen, pour the blood contained in them into the right auricle of the heart. This contracts and passes the blood on into the right ventricle, from which it passes by the pulmonary artery to the lungs. The pulmonary arteries divide into smaller and smaller vessels, and the blood ultimately passes through thin-walled capillaries over which the air in the lungs plays freely, and through which gases pass out and in. The blood which is thus purified returns by the pulmonary veins to the left auricle of the heart, which passes it on to the left ventricle. The left ventricle by its contractions drives the blood into the aorta, from which the large arteries arise. By these the blood is distributed all over the body, and it finally passes through another set of capillaries in all the organs. From these it is again collected into the veins to make another circuit. This circulation is maintained always in one direction by four valves situated one at the outlet from each cavity of the heart, and large valves situated in

CIRCULATION, DISORDERS OF

some of the larger veins. The speed of the blood is much quicker in the large than in the small vessels, and the time taken for a complete round is a little over one minute.

CIRCULATION, DISORDERS OF.

—**Causes and Symptoms.**—*Congestion* is a condition sometimes due to inflammation, sometimes to an obstruction to the veins which should carry off the blood, or very often to the feebleness of the heart, which cannot drive the blood upwards from dependent parts like the feet, or like the back portions of the lungs in bed-ridden persons. In old persons with diseased vessels, in which blood-clots are liable to form, congestions of the brain readily take place from such obstructions. In weak persons, or those exhausted by illness, lying constantly on the back, congestion of the lungs is very apt to come on. Congestion of the lungs with bronchitis, and congestion of the liver and stomach with various disorders of digestion, are common results of valvular disease of the heart. (See HEART DISEASES.)

Dropsy and *varicose veins* are similar disorders often due to obstruction of veins. Dropsy is also a usual result of valvular heart disease, but still more commonly results from kidney disease. (See DROPSY and VEINS, DISEASES OF.) *Bloodlessness* of parts is a disorder in the opposite direction, due to spasm and extreme narrowing of arteries. It occurs in the form of 'dead fingers', generally in women of a nervous temperament. A similar appearance often precedes *chilblains*, which occur in persons of sluggish circulation. *Cold feet and hands*, especially at night, form a milder variety of the same condition. *Insomnia* in elderly persons is very frequently due to a disordered circulation.

Treatment.—Where any failure of the heart is present, the case is treated by various cardiac tonics, by rest, and by graduated exercises. Cases of disordered circulation depending on the blood-vessels are much benefited by

CITRIC ACID

cold baths (*see* BATHS) and daily vigorous exercises, while good diet, warm clothing, and tonics are of the greatest importance for their cure. (*See also* CHILBLAINS.)

CIRCUMCISION means the cutting round and removal of the foreskin. It is performed as a religious rite among many tribes, notably by the Jews, and is advisable when the foreskin is so narrow at the opening, or so adherent, as to render its drawing back, for washing, impossible. If done in infancy, it is a trivial operation.

CIRRHOSIS is a diseased condition of various internal organs, such as the liver, in which the proper tissue is replaced by fibrous tissue similar to scar-tissue.

CITRATE OF IRON AND QUININE and **CITRATE OF IRON AND AMMONIA** are much used and very valuable for tonics, especially after attacks of rheumatism and fevers. The dose is 5 to 10 grains of either dissolved in water.

CITRIC ACID is the acid which gives their sharp taste to lemons, limes, unripe oranges, currants, and raspberries. It is practically identical in action and appearance with tartaric acid, which is obtained from grapes and other fruits, though the two differ in chemical composition. They are similar also to malic acid, found in apples, pears, and the berries of the mountain ash.

The acids themselves have the power of allaying thirst by stimulating the flow of saliva, and also of creating a feeling of coolness. For both these reasons they are much used for cooling drinks in fever. When, in addition, the stomach is irritable, they are best taken in the form of effervescing drinks, which soothe this organ.

For feverish conditions a few slices of lemon may be put in a tumbler of drinking water, or 'Imperial Drink' made as follows: To one pint of cold water add a teaspoonful of cream of

CITRINE OINTMENT

tartar, a squeeze of lemon, and two lumps of sugar.

CITRINE OINTMENT, or **NITRATE OF MERCURY OINTMENT**, is used for stimulating sluggish ulcers, and also diluted with olive oil to smear over boils and prevent these from spreading, and in cases of eczema.

CLAVICLE is another name for the collar-bone.

CLAVUS is a form of neuralgia about the head, often found in hysterical persons and others, compared by them to the pain of driving in a nail. (See **NEURALGIA**.)

CLEANLINESS (see **ASEPSIS**, **ANTI-SEPTICS**, **BATHS**, **DISINFECTION**).

CLEFT PALATE is the term applied to a fissure of the roof of the mouth sometimes present at birth and very often combined with hare-lip. (See **PALATE MALFORMATIONS**.)

CLERGYMAN'S SORE THROAT is the name given to a complication of throat ailments, which gradually comes on in those who do much public speaking, and who possess weak vocal organs.

Treatment.—The first essential is to obtain a correct voice-production, by expansion of the chest (see **CHEST**, **DEVELOPMENT OF**), for the chest is often badly formed or undersized, and by a course of lessons on elocution from a good teacher. The affected person must also get out of the bad habit of straining the throat in speaking. Secondly, the mucous membrane of the throat must be got back to its original state by such measures as inhalations of ammonium chloride; gargles of potassium chlorate, or of solution of common salt (two teaspoonfuls to a tumblerful of cold water); painting the back of the throat with tincture of iodine or glycerin of tannin, and similar procedures. When the chronic inflammatory condition has proceeded further, and has set up considerable laryngitis and pharyngitis, the case should be under the care of a throat specialist, for local astringent applica-

CLIMATE

tions to the larynx, throat, and nose are necessary, or even the reduction of swollen mucous membrane by the cautery.

CLIMACTERIC was a word originally applied to the end of certain epochs or stages in the life of an individual, at which some great change was supposed to take place. In women at the grand climacteric there is a special liability to bodily and mental weakness, although in those of a previously robust constitution any such change is generally merely temporary. (See **MENSTRUATION**.)

CLIMATE is of great medical importance because various diseases are found in one part of the world and not in others, and also because a change from one country or part of a country to another is often a valuable means of cure. Climates are divided generally into hot, temperate, and cold climates.

Hot climates are thus found within and a short distance north and south of the tropics. They have a high temperature throughout the year, and wet and dry seasons. The most unhealthy parts of the tropics are the Amazon Valley, the Gold Coast, the Congo Valley and Borneo, which lie on or near the equator. In these hot climates people tend to be lethargic and indolent; the skin and digestive organs are particularly active and liable to disease, so that diseases such as dysentery, yellow fever, malaria, degeneration of the liver, and diseases due to parasites are specially common, while on the other hand lung diseases are comparatively rare.

Temperate climates have in general four seasons, and work is carried on in these regions with much greater ease. Diseases of the chest and kidneys are more common here than in hotter regions.

Cold climates are those from about 55° latitude to the poles. The people of these northern latitudes are gener-

CLINICAL

ally distinguished for special hardiness and vigour.

Apart from these broad divisions of climate, nearness to the sea and the altitude are of great importance. Seaside air is very suitable for persons convalescent from acute diseases, those worn out by exhausting work or business worries, and children suffering from enlarged glands.

Mountain regions where the air is thin are specially suitable for young persons who are delicate, people who are anæmic, and for those who suffer from chronic lung diseases. For the aged and those with heart or kidney disease, mountain climates are unsuitable.

Dry or desert climates combine warmth and dryness, and these are specially suitable for consumptive cases in which cavities of the lung are present.

CLINICAL means literally 'belonging to a bed', but the word is used to denote anything associated with the practical study or observation of sick persons, as clinical medicine, clinical thermometers.

CLOT is the term applied to any semi-solid mass of blood, lymph, or other body fluid.

CLOTHING has certain medical aspects in its relation to the preservation of health.

Five chief substances are used in manufacturing clothes, viz.: *sheep's wool*, from which worsted, poplin, flannel, alpaca, and cashmere are made; *silk*, from which also velvet, satin, and crepe are produced; *flax*, from which linen and the finer cambric and lawn originate; *cotton*, giving us, by various forms of weaving, calico, jean, flannelette, fustian, and muslin; and *cellulose*, producing artificial silk.

However these are manufactured, each of the five has certain properties which render it more or less suitable for clothing purposes in different circumstances.

General considerations.—For out-

CLOTHING

door clothes, sheep's wool is warmest in winter. For *summer wear* light-coloured clothes are coolest, and for much exercise with periods of rest, such as at cricket, tennis, etc., the clothes should be of white wool. For *underclothing*, one should wear wool next the skin both summer and winter, persons with irritable skin choosing fine merino wool or a network garment. Loose-fitting underwear is both more comfortable and warmer than tight-fitting. For night-wear, linen, cotton, or silk is better than flannel, because the warmth is maintained by the bedclothes and the sleeper does not, or should not, perspire. *Hats* are of importance to men, though of little necessity as a covering to women with thick hair. The silk hat is, perhaps the worst form possible for summer wear. (See **BALDNESS**.) For winter a soft felt is, perhaps, the ideal wear, while in summer a straw or light-coloured felt is suitable, and, for the blazing suns of the tropics, a helmet of pith or wickerwork covered with white cotton. *Veils* are probably quite harmless, apart from the dye they contain possibly causing eruptions; nevertheless, they have been blamed as the cause of squinting and short-sight. *Corsets* are of very doubtful value. For young and healthy women they are quite unnecessary. For elderly women, who possess much fatty tissue, corsets, combined especially with an abdominal belt, give relief from many minor troubles and improve the figure. An abdominal binder or cholera belt of woollen material is very useful for persons subject to intestinal disorders. An abdominal belt is also helpful in the case of displacements of various organs such as the kidney and stomach. *Boots* form often a badly made article of clothing. (See **CORNS AND BUNIONS**.) Children, especially when growing rapidly, may show a tendency to 'weak ankles' or 'flat-foot'. They should wear shoes or

CLOVES

sandals, because boots prevent the natural action of the ligaments and muscles at the ankle; the shoes should also have low heels.

CLOVES are the unexpanded flower-buds of a species of myrtle from the Indian Archipelago. Oil of cloves, got by distillation from the flower-buds, is a powerful antiseptic, checks griping, and covers bad breath. It may be taken in doses of 2 or 3 drops on a lump of sugar. Cotton-wool dipped in clove oil, and put in a hollow tooth, relieves toothache.

CLUB-FOOT, or **TALIPES**, is a deformity in which the foot is permanently twisted at the ankle-joint, so that the sole no longer rests on the ground in standing.

Treatment.—For the cases acquired after birth, an elaborate treatment, including one or several operations, or the wearing of some special appliance to support the ankle in the correct position, is usually necessary. When the deformity is due to paralysis, the application of massage and electricity to the affected muscles is often requisite. When it is caused by scars or muscular spasms, the muscles or their tendons must be divided before replacement in the correct position is possible. In all cases it must be remembered that, after the foot has been placed in good position by operation or otherwise, the cure is not complete till after several years of care, because there is, for long, a great tendency to relapse.

The cases found deformed at birth have some distortion in shape of the bones about the ankle, but, as these bones are very soft in the young child, the condition is often quite remediable by attention on the part of the mother or nurse. The position of the foot must be corrected several times daily, the nurse grasping the fore part of the foot and pressing it gently, slowly, and firmly into position, after which she holds it in place for five or ten minutes. In addition to this, the muscles of the leg, especially those

COAL-MINER'S LUNG

opposite the side to which the foot turns, should be repeatedly massaged every day. Generally it is also necessary to apply a splint which holds the foot in the correct position, so that, as growth goes on, the bones are moulded to the proper shape in a few months.

If the condition be not attended to at once after birth, and also in bad cases, an operation may become necessary, consisting, during the first few months of life, in the division of tendons, and if deferred till later, in the removal of parts of the deformed bones, so that the foot may be brought to its natural position.

COAL-GAS is a mixture of several gases, but owes its dangerous properties to carbonic oxide or carbon monoxide gas, which is present to the extent of 5 or 10 per cent. Water-gas, which is sometimes mixed with coal-gas, contains a still larger proportion of this dangerous substance. It has two dangers, that of explosion and that of poisoning. Explosion takes place when gas has escaped into a closed space to such extent as to make a mixture of 1 part of gas to 10 parts of air, and when a light is brought into the mixture. But a mixture of 1 part of gas to 100 of air is a dangerous poison to inhale. When a poisonous amount of coal-gas is inhaled, unconsciousness may suddenly supervene, and unless treatment be promptly applied, the condition is very serious.

Treatment of coal-gas poisoning consists of artificial respiration and fresh air. (*See DROWNING.*) The inhalation of oxygen or air containing a small quantity of carbon dioxide (4 to 6 per cent) has been found especially valuable in mine-rescue work for freeing the blood quickly from carbon monoxide gas.

COAL-MINER'S LUNG is a condition in which, from the constant respiration over many years of air containing fine coal dust, this is deposited in the tissues of the lungs, which, in consequence, become black in colour

COCA

and slightly hardened. The coal dust appears to have very little harmful effect.

COCA, or **CUCA**.—Coca leaves are got from two South American plants and contain an alkaloid, **COCAINE**, which has most marked effects as a stimulant, and, locally applied, as an anæsthetic by paralysing nerves of sensation.

Before the serious effects that result from its habitual use were realised the drug was sometimes used by hunters, travellers, and others to relieve exhaustion and breathlessness in climbing mountains, to steady the nerves, and to dull hunger. Also it was taken by students to carry them over a short period of intense brain work, such as in passing an examination. But this practice is extremely dangerous as tending to result in a habit. (See **DRUG HABITS**.)

COCYX is the lower end of the spinal column, consisting of four nodules of bone, which represent vertebræ, and correspond to the tail in lower animals.

COCILLANA is the bark of a South American plant with properties similar to those of *ipecaeuana*. It is much used as a remedy in coughs and also as an aperient.

COCOA, or **CACAO**, is a West Indian plant, of which the seeds or 'nibs' contain fat, starch, gum, and a stimulating principle theobromine. (See also **CHOCOLATE**.) The 'soluble cocoa', sold for domestic use, has much of the fat removed, and consists about one-half of sugar and starchy material, one-quarter of fat, one-fifth of albuminous material, and of moisture, salts, etc., in small amounts. The cocoas of different makers are all very similar. As a food, cocoa is much overrated, although it contains a fair amount of fat, and, when made with milk and sugar, forms a valuable food. As it contains little tannin, it is sometimes tolerated by a weak stomach better than tea.

CODEINE is one of the active

COFFEE AND TEA

principles of opium, much used to check severe coughing.

COD-LIVER OIL is made in large quantities in Norway and Newfoundland by purification of the oil pressed from the livers of cod-fish. Its value lies in the fact that it is a liquid and easily digested form of fat, the biliary substances, mixed with the oil in small amount, possibly aiding its absorption. It seems also to aid the absorption of other food in wasting diseases. The oil is made much more palatable by being mixed with gum or glycerin, so as to form an emulsion, which then consists in about half its bulk of oil. Cod-liver oil with extract of malt is very nutritious, and generally readily taken by children. Part of the value of cod-liver oil lies in the fact that it contains a large amount of fat-soluble vitamin D which renders it specially useful in the prevention and cure of rickets.

An emulsion is taken more readily by children than the pure oil, and should be given in small amount at first. A teaspoonful after the evening meal for a day or two, increasing to a dessertspoonful, and later to a tablespoonful, always immediately after meals, is the best way to commence its administration. Lemon juice removes its taste from the mouth after swallowing.

COFFEE and TEA are food accessories used to an enormous extent, and frequently misused. They agree in containing the same active principle, caffeine or theine, and tannic acid (or tannin), in addition to vegetable fibre and albuminous matters, while both possess volatile oils, which give them their peculiar aroma and flavour.

They retard the digestion of starchy food like bread, and of light meats to a special extent. Consequently, though tea and coffee increase the value of the food taken by those who do hard work and have a good digestion, 'high teas' and similar meals are bad for those who have already a weak stomach and slow digestion.

When tea is taken purely as a nerve stimulant, as in the afternoon, it should be drunk without milk or sugar, and nothing should be eaten; but with meals the slowing effect on digestion is lessened by adding milk, or by infusing the tea with boiling milk instead of water.

Tea poisoning is a rather vague but troublesome condition, in which persons who drink too much of this beverage suffer from indigestion, palpitation of the heart, faintings, depression, and extreme nervousness.

COLCHICUM, the bulb of meadow-saffron, has long been used as a remedy for gout in all the forms of this disease.

COLD, INJURIES FROM (*see* CHILBLAINS, FROST-BITE, *also* CHILLS AND COLDS).

COLDS (*see* CHILLS AND COLDS).

COLIC. By this term is generally understood an attack of pain in the abdomen, usually seated in the neighbourhood of the navel, of spasmodic character, and accompanied usually by constipation.

Attacks of colic may occur in connection with a variety of causes, *e.g.* from accumulations of feculent matter in the intestines in the case of those who suffer from habitual constipation; also as an accompaniment of nervous and hysterical ailments, and not infrequently as the result of exposure to cold and damp, particularly where the feet become chilled, as in walking through snow. Similar attacks of colic are apt to occur in infants, especially those who are fed artificially; and in such cases it will generally be found that a temporary change of diet will be necessary. The duration of an attack of simple colic is seldom long, and in general no ill consequences follow from it. It is, however, not free from risk, especially that of sudden obstruction of the bowel from twisting, or pushing of one part within another (intussusception) during the spasmodic seizure, giving rise to a very grave condition. Colic is also a serious symptom when

due to obstruction of the bowel by a tumor or similar condition. (*See* INTESTINE, DISEASES OF; INTUSSUSCEPTION.)

The terms *biliary colic* and *renal colic* are applied to that violent pain which is produced, in the one case, where a biliary calculus or gall-stone passes down from the gall-bladder into the intestine, and in the other where a renal calculus descends from the kidney along the ureter into the bladder. (*See* GALL-STONES and KIDNEY, DISEASES OF.)

Treatment.—The treatment of colic consists in means to relieve the spasmodic pain, and in the removal, where possible, of the cause upon which it depends. The former of these indications is fulfilled by the administration of opiates (except in the case of children) and of belladonna and the application of warm fomentations to the abdomen. Where the attack appears to depend on accumulations of irritating matter in the alimentary canal, a brisk purgative, such as castor oil, will, in addition, be called for. Pressure upon the abdomen is also very effective in relieving the pain partially if not completely. It may be effected, in the case of a child, by laying it face downwards across the nurse's arm, and in the case of older people by laying a hot-water bottle upon the abdomen, or by lying face downward upon a folded-up pillow. The various substances known as carminatives or antispasmodics (*see* ANTISPASMODICS) also aid in giving relief.

COLITIS means inflammation of the colon or large intestine. Chronic colitis is known by various names such as *mucous colitis*, *membranous enteritis*, *mucous colic*, etc., and occurs especially in women of a nervous or hysterical type. It has increased greatly in frequency of recent years, partly in all probability owing to the spread of luxury in eating and partly in consequence of its having attracted greater attention in slight cases.

COLLAPSE

Symptoms.—The most prominent symptom usually is the passage of large quantities of mucus along with the stools, which may be either slimy and gelatinous, or in strings and strips of membrane. This appearance of mucus alternates with periods of constipation, and is associated with diarrhœa and pain in the abdomen. Most of the patients are nervous, self-centred, and very often highly neurasthenic; and even after the bowel condition is cured, feebleness of strength, palpitation on exertion, and similar symptoms generally persist for a long time. The disease is not serious to life, but is usually very prolonged and difficult to treat.

Treatment.—In the first place the general symptoms of debility and nervousness require treatment by rest and tonics or by occasional change of air and scene. In many cases this, combined with a return to a dietary of simple food restricted to three meals daily, is sufficient to effect a cure. In more advanced cases, in which the discharge of mucus is considerable, or putrefactive changes in the stools are taking place, irrigation of the bowel with warm saline or alkaline fluid through a long soft rubber tube—known as the Plombières douche—is highly beneficial. Various intestinal antiseptics such as salicylate of bismuth, salol, naphthol are also given, and some authorities believe in the efficacy of vaccines made from the germs present in the stools. In very severe and intractable cases an operation may prove helpful.

COLLAPSE is a condition of extreme weakness of all the bodily powers, and especially of the nervous system. It forms the termination of many severe diseases, such as cholera, typhoid fever, irritant poisoning, etc. It is closely allied to the condition of surgical shock, but, while in collapse from the conditions mentioned the chief feature is feebleness of the heart's action, in shock there are

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numerous other prominent symptoms. (*See SHOCK.*)

The patient should be allowed to lie quietly on his back in a darkened room, well covered, and surrounded by hot bottles to maintain the body heat. Stimulants are also necessary.

COLLAR-BONE, or **CLAVICLE**, is the bone which runs from the upper end of the breast-bone towards the tip of the shoulder across the root of the neck.

COLLES'S FRACTURE is a fracture of the lower end of the radius close to the wrist, caused usually by a fall forwards on the palm of the hand. This fracture is very liable to be of the impacted variety, one end of the broken bone being driven inside the other. A certain amount of deformity is usually left after union of the bone has taken place, and it is difficult to avoid some stiffness at the wrist joint.

COLLODION is a thick, colourless, syrupy liquid, made by dissolving gun-cotton in a mixture of ether and alcohol or with acetone. When it is painted on the skin the solvent evaporates, leaving a tough film behind.

Collodion is mainly used as a covering for wounds, after these have been purified. The objection to its use is that, if a wound, or the surface round it, be not absolutely pure, the discharges from the wound are retained by the collodion, and may carry infection deeply into the tissues. Medicated collodion is used in many skin diseases.

COLLYRIUM means an eye-wash.

COLOCYNTH, or **BITTER APPLE**, is the fruit of a species of cucumber growing on the Mediterranean shores. The dried white pulp is a powerful and much used purgative.

COLON is the large intestine. (*See* **INTESTINE.**)

COLOUR BLINDNESS (*see* **VISION, DISORDERS OF.**)

COLT'S-FOOT is the name given to the leaves of the butter burr, a plant much used in the form of a decoction for the treatment of coughs.

COMA

COMA is a state of profound unconsciousness, in which not only can the sufferer not be roused, but there are not even reflex movements when the skin is pinched, the eyeball touched, etc. The breathing is generally stertorous, but deep, and the heart's action is strong. The cause of coma is usually apoplexy, but it may also be due to high temperature in fever, diabetes, Bright's disease, and to various poisons. If the condition does not begin to pass off in twenty-four hours, death is generally near at hand.

COMEDONES (*see* ACNE).

COMPLEXION (*see* ACNE, SKIN DISEASES, SUNBURN).

COMPRESS is the name given to a pad of linen or flannel wrung out of water and bound to the body. It is generally wrung out of cold water, and may be covered with a piece of waterproof. It is used to subdue pain or inflammation. A hot compress is generally called a 'fomentation'. (*See* FOMENTATIONS.)

CONCEPTION signifies the complex set of changes which occur in the ovum and in the body of the mother at the beginning of pregnancy. The precise moment of conception is that at which the male element, or spermatozoon, and the female element, or ovum, fuse together.

CONCRETIONS are masses of various sizes and substances which form in many of the tissues and smaller cavities of the body, in certain circumstances.

CONCUSSION OF THE BRAIN (*see* BRAIN).

CONDIMENTS (*see* DIET).

CONDURANGO is the bark of a South American plant which is much used as a bitter tonic, the tincture being given in doses of 1 to 2 drams.

CONDYLOMA means a localised, rounded swelling of mucous membrane often found about the opening of the bowel, especially in cases of syphilis, and disappearing slowly as

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this disease is treated, or requiring removal by caustics or by cutting.

CONDY'S FLUID is a powerful disinfectant containing permanganate of sodium in water. (For its action and uses *see* PERMANGANATE OF POTASSIUM.) Green Condy's fluid contains manganate of sodium, which has a similar action.

CONFECTIONS, also known as conserves and electuaries, form a method of prescribing certain bulky drugs mixed into a paste with sugar or honey. The best-known confections are those of senna and sulphur, both of which are aperient in action. Compound confection of guaiacum, better known as 'Chelsea Pensioner', is an excellent remedy for constipation and rheumatic pains in elderly people, having received its name from the success of its use among the men of that hospital. The dose of all these confections is a teaspoonful or more.

CONGENITAL deformities, diseases, etc., are those which are either present at birth, or which, being transmitted direct from the parents, show themselves some time after birth.

CONGESTION means the accumulation of blood in a part due to overfilling of its blood-vessels. The condition may be due to some weakness of the circulation (*see* CIRCULATION, DISORDERS OF), but as a rule is one of the early signs of inflammation. (*See* INFLAMMATION.)

CONJUNCTIVA is the membrane which covers the front of the eye.

CONJUNCTIVITIS means inflammation of the conjunctiva. (*See* EYE, DISEASES OF.)

CONSOLIDATION is a term applied to solidification of an organ, especially of a lung. The consolidation may be of a permanent nature due to formation of fibrous tissue, or may be temporary, as in acute pneumonia.

CONSTIPATION, or COSTIVENESS, means a condition in which the bowels are opened too seldom or incompletely. It should, however, be borne in mind that, though most persons have in

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health one daily movement of the bowels, some perform this act twice, while, in others, a motion once in two or more days is perfectly natural. Constipation is a chronic condition, and must be carefully distinguished from acute obstruction of the bowels, a much more serious condition. (*See* **INTESTINE, DISEASES OF.**) The stool of a healthy person, with good appetite, should be light brown in colour, about 5 ounces in weight, and about 5 inches long, should cohere in one or two pieces but should be sufficiently light to float in water. Great variations, however, take place in colour (*see* **STOOLS**), in amount, and in consistence, according to the nature and quantity of the food and drink taken.

Causes.—The discharge of the undigested remnants of food is, of course, directly dependent on the proper performance of the complex act of digestion (*see* **DIGESTION**), and, often, some change in diet may be sufficient to relieve the constipated condition.

GENERAL CAUSES.—There is a particular type of person all of whose functions, mental and bodily, are slowly performed, though the physique may be good and the intellect powerful, and such persons are specially liable to have constipation. Many persons of an active temperament, if deprived of their usual exercise for a day or two, or especially if they take up a sedentary employment, begin at once to suffer in a marked degree from this trouble. In some persons even a railway journey, or long carriage drive, is sufficient to disorganise the movements of the bowels for days. General sluggishness in the earlier part of the day, including constipation, is not infrequently produced by too great an allowance of sleep. The drinking water, when very hard or very soft, is in some cases responsible. The quality of the drinking water is usually the cause of constipation from which some people and themselves liable to suffer, when-

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ever they go for a few days to some special locality. Further, some diseases of a constitutional nature, of which diabetes is the chief, produce marked constipation.

LOCAL CAUSES.—The passage of the materials, taken in as food, occupies about three or four hours through the small intestine, and sixteen hours or thereabout through the shorter and wider large intestine. In constipation, the delay takes place usually in the latter, the functions of which are slow in any case. Most cases are due either to the fact that the lower part of the bowel has lost its 'tone' and is flaccid and weak, or to the fact that its movements are irregular, instead of being directed towards squeezing on the motions, slowly and systematically, to the outlet. The latter condition is found in those who, instead of making a regular practice of relieving the bowels daily at the same hour, on account of business, or social duties, or irregular hours of rising, neglect this important natural function. It occurs also in persons suffering from painful conditions of the bowel itself, such as piles, or of neighbouring organs, such as the ovaries, womb, or bladder. Intractable constipation in children is not uncommonly attributable to the necessity for circumcision, and is relieved by this operation. In old people, constipation of this spasmodic sort is often a great annoyance. The stools are passed in small, hard pieces, and, not uncommonly, covered by skin-like fragments of mucus, produced by the state of chronic irritation, which the retained stools set up, in the mucous membrane lining the bowel. The other condition of flaccidity follows upon long-continued constipation, on account of the lower bowel being constantly distended with putrefying materials, instead of being allowed to contract after a movement for some hours every day, also in elderly women who have borne several children, and in neurasthenic

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persons, whose whole muscular system has become flaccid. It happens also, at times, when too little food is taken, or when the great bulk of the food consists of substances, such as milk, which form perfect foods, and leave no residue to stimulate the wall of the intestine to contraction. A similar condition follows, as a reaction, upon the copious evacuation of the bowels due to a powerful purgative, and in persons who constantly use aperients unnecessarily, or in a wrong way.

Treatment.—The first step in treating constipation is to obviate, so far as possible, any of the general causes, described above, which tend to bring on the condition. The most important matter is, perhaps, the regulation of the daily habits. The person concerned should not sleep an unreasonable length of time. He or she should take a certain amount of exercise daily without fail, the extent depending on the physique, but amounting, at least, to walking several miles or its equivalent. Above all things, a habit of opening the bowels at the same time every day should be cultivated; a definite hour should be fixed, preferably after a meal, and best after breakfast, and, no matter whether there be a sensation that the bowels will move or not, the attempt should unfailingly be made. Persons who are at all robust have the vital functions quickened by a cold bath on rising, and, among other things, this assists the shaking off of constipation. (*See BATHS.*) Some persons find that smoking a pipe of tobacco after breakfast is also beneficial. The diet is of vital importance. On the whole, in cases of constipation this errs in being too concentrated and too unirritating, although the same trouble exists among country-people who use a coarse vegetable dietary. As a rule, however, the diet should be changed to include oatmeal porridge, brown bread, green vegetables, and fruit,

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especially fruits like prunes or brambles, which have a large indigestible residue, while a considerable amount of fluid should be taken. The juice of an orange or grape-fruit in the early morning, or a draught of one of the mildly aperient waters, in strength of about a wineglassful to a tumblerful of plain cold or warm water, taken immediately on getting out of bed, or a regular dose at this time of a simple saline, such as one heaped teaspoonful of Glauber's salt, is also helpful.

When a coarse diet has been tried without avail, particularly in persons who have been addicted to the use of violent purgatives, a change to a diet of milk, white soups, and fish in small amount, with an avoidance of meat, eggs, and all coarse vegetables, is likely to be beneficial. Whichever type of diet be taken, soft fats, such as cream, butter, and salad oil in large quantities, are of immense value.

The use of aperients and purgatives is a much debated question. When the bowels are sluggish, and when the milder means have been tried without avail, they should certainly be adopted, but should be used in such a way as to form an article of diet. For example, a few drops of liquid extract of cascara with half a teaspoonful of glycerin in water three times daily after meals, or an after-dinner pill of aloes, may be taken. Liquid paraffin in doses of a dessert- or tablespoonful, night and morning or three times daily after meals, is an excellent and harmless remedy for regular and prolonged use. Liquid paraffin of jelly-like consistence, flavoured in various ways, and often having some other aperient added to it, is obtainable under numerous proprietary names and is very suitable for this purpose.

For constipation associated with rheumatism or piles in old people, one of the oldest remedies is the compound confection of guaiacum used by the Chelsea pensioners. (*See*

CONSTITUTION

CONFECTION.) Persons in whom constipation is associated with a fatty or congested liver may take an occasional dose of blue-pill.

Persons of a generally flaccid or neurasthenic type are often benefited by massage of the abdomen, consisting of firm rubbing round this cavity in the direction of the hands of a clock, so as to stimulate the gentle movements of the bowels, and by various forms of electrical application. When the flaccidity affects the lower end of the bowel merely, and it is felt that the stools are ready to be expelled, while the difficulty lies in the act of expulsion, an injection of a few ounces of cold water may be made every morning, or, when this is useless and the stools are very hard, a pint or more of warm soapy water or half a pint of warm olive oil now and then. These warm injections must not become a regular habit or, in the end, they will simply increase the flaccidity from which the constipation arises. Instead of the enema, a teaspoonful of glycerin may be injected with a small syringe, or a suppository of glycerin or pellet of common soap, as large as a hazelnut, may be introduced into the bowel after breakfast. Further, persons suffering from this flaccid state should adopt a crouching instead of a sitting posture in opening the bowels.

CONSTITUTION, or **DIATHESIS**, means the general condition of the body, especially with reference to its liability to certain diseases.

CONSUMPTION, or **PHTHISIS**, is the name given, in popular language, to a disease in which the main symptom is a rapid or gradual wasting away of the body, accompanied by fever, associated with loss of strength and enfeeblement of all the bodily functions, and following on a destructive change in one or more organs. The name consumption is a general term applied to the malady, no matter in what organ the destructive change

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which causes it takes place. The term phthisis is usually restricted to consumption due to disease in the lungs, the full technical name being pulmonary phthisis. The essential part of the disease receives the general name of tuberculosis, and consists in the formation in the substance of an organ of 'tubercles', fine granules of a size barely visible to the naked eye, these tubercles multiplying and changing in such a way as to lead finally to the destruction of the organ in which they are found.

Probably almost all cases in which this disease primarily affects the lungs are due to inhalation of dust laden with the bacilli or inhalation of droplets coughed into the air by a phthisical patient, while those cases in which the glands of the neck are first attacked, arise by absorption of the bacilli through the tonsils.

That this manner of infection is of great importance is shown by the fact that of all persons dying of tubercular diseases generally in England and Wales over four-fifths die from this disease as it affects the lungs.

It has long been believed that tuberculosis, like other infectious diseases, can be conveyed by means of milk and other articles of food, and, acting upon this belief, sanitary authorities have enforced regulations designed to protect the public, so far as possible, from the effects of consuming diseased milk.

Causes.—The direct cause of the disease is the tubercle bacillus discovered by Koch. But, in view of the fact that many people suffer from consumption in a mild degree and afterwards recover, and that many limited cases of tuberculosis in bones, skin, glands, etc., are successfully treated, it appears that there are other factors which determine whether a given case is serious or not, and whether it is likely to proceed towards recovery, if properly treated, or to end inevitably in death.

AGE is an important point. Young children, as above stated, are liable to tuberculosis affecting the bowels and the glands connected with them. At a slightly later age there is a greater tendency to that type of the disease formerly known as scrofula, the glands of the neck particularly being affected, and the greatest mortality from lung consumption takes place after the age of twenty is reached.

ATMOSPHERE.—The character of the atmosphere in which work is carried on has much to do with the onset of phthisis. Those who habitually live and work in ill-ventilated rooms or who inhale irritating dust are at a great disadvantage compared with those who lead an open-air life or, at all events, keep their rooms well ventilated. Thus among agricultural labourers there are few deaths from phthisis; among wool-workers, carpet-makers, and masons there are about twice, as many; among iron, steel, and copper workers three times; while cutlers, scissors-grinders, and file-makers head the list with four times as many consumptives as the agricultural labourers.

Symptoms.—(a) **EARLY STAGE.**—In this stage the tubercles are being deposited in the lung, almost always near the apex; and this part of the lung becomes, in consequence, more solid. There is cough of an irritative nature, particularly in the morning, either without any expectoration or accompanied by a little clear mucus. Sometimes the first sign of all is the spitting up of blood, which is never copious at this stage, and is due to congestion caused by the irritation of the tubercles.

There is generally, from the first, loss of appetite, colour, and strength, followed soon by actual emaciation and loss of weight. Perspiration upon slight exertion is usual, and very often night sweats are a symptom. A very important sign is a regular rise of temperature, either in

the forenoon, or more often in the early afternoon, with a fall below normal in the early morning, but this is not an invariable symptom of phthisis at this stage. The digestive functions are usually thrown out of gear, and there is apt to be sickness, diarrhœa, or constipation. A slight attack of pleurisy, causing pain in the chest, very often precedes or accompanies these symptoms. This is the stage in which the disease is readily curable.

(b) **STAGE OF ADVANCING DISEASE.**—By this time the tubercles have fused to form caseous masses, and these are breaking down and being spat up, leaving a ragged cavity, while the disease is slowly advancing to new areas of the lung. The surface of the cavity becomes infected sooner or later with other organisms inhaled on dust, and these keep up the ulcerative process on the surface of the cavity and prevent its healing. The symptoms are mainly an increase of those present in the first stage. The cough is more troublesome and the spit is thick and yellow, contains large numbers of tubercle bacilli, which can be stained and microscopically examined, and is occasionally streaked with blood. The sufferer is much weaker, and has greatly lost in weight. The temperature is of a swinging 'hectic' type, rising to 100° or 101° Fahr. in the late afternoon and falling considerably below normal in the early part of the day. Drenching night sweats are apt to break out during sleep in the early hours of the morning, and attacks of vomiting or diarrhœa are not infrequent. The disease may at this stage be found in both lungs or in other organs, like the throat or intestine, with which the sputum comes in contact. A very important sign is that of falling in of the chest over the excavated area, so that a flat place or depression is found in its upper part. Recovery in this stage occasionally occurs, but, if the disease

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gets so far without treatment, a perfect cure is generally out of the question.

(c) **LATE STAGE.**—In this stage large cavities have usually formed in the lung, or there has been a production of fibrous tissue, the lung being shrunken and consisting of a mass of matted fibrous tissue and smaller cavities. Accordingly, the whole side has usually fallen in considerably. The second lung is by this time extensively affected, and, very often, the voice is husky on account of disease in the throat, or there is troublesome diarrhoea due to affection of the bowels. Hæmorrhage is not uncommon in this stage, and death may by this means be brought about. There are also swelling about the feet and other signs of gradual failure of the heart. The emaciation is now extreme, and bed-sores are very apt to form. The swinging temperature and the excessive sweats continue, and the cough is often most troublesome.

The duration of the illness varies much, according to the food which the sufferer receives and the care with which he is nursed. Among the poorest classes a case may last less than a year, while the average duration of cases which grow steadily worse is between one and three years. Among people in whom the conditions of life are easier, the disease may be indefinitely prolonged, and in persons of comfortable circumstances the average duration is seven or eight years. During a great part of this time patients are usually fit for work that does not involve great strain.

Treatment.—This falls very naturally into two classes—(a) preventive and (b) remedial.

(a) **PREVENTIVE TREATMENT.**—Children who are known to have a tubercular taint should live a more guarded life than usual, and should be well fed, well exercised, and carefully protected from infection. In

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the case of such children it is a wise precaution to sterilise all milk and cream that they consume, or to obtain for them milk from tuberculin-tested cows. Delicate persons, and especially those who have any lung trouble and those just recovered from diseases like pneumonia, measles, and enlarged tonsils, should keep aloof from consumptives. Persons with poorly developed chest should take measures to remedy this (*see* CHEST, DEVELOPMENT OF), and those who are liable to attacks of bronchitis, general catarrh, and the like, should take measures such as cold bathing, athletic exercises, etc., to harden the body and increase their powers of resistance.

Public authorities have done much by attending to the ventilation of work-rooms, by preventing overcrowding in the homes of the very poor, and by the better housing of the working classes, to educate the masses in healthy habits and make the attainment of these possible. In this way a great step has been taken towards checking the spread of tubercular infection. Still more effective means are being taken now by many sanitary authorities in large towns to limit the disease, by obtaining notification of all cases of phthisis, visiting these, and providing their friends with the necessary means of disinfection; and further, by preventing persons suffering from advanced consumption from working in bake-shops, confectioneries, and similar places, where their presence is a menace to the public safety. The habit of spitting on the floor of public conveyances and of public offices, where the expectoration dries, and whence any bacilli it may contain are wafted about on the dust, is rightly put down in well-regulated towns.

All consumptives should carry with them a sputum-flask, in which is a small quantity of 5 per cent carbolic acid solution, 3 per cent lysol solution or other disinfectant, which sterilises

the sputum speedily, and this should, once a day, be either poured down the drain or destroyed in the fire. All other discharges from tuberculous patients should be treated in the same way by mixing thoroughly with a disinfectant.

(b) REMEDIAL TREATMENT.—Early cases are much benefited by a change of air. Sea voyages in many cases, mountain air in others, and a winter spent in a dry, bright climate in still a third group are most valuable, and, judiciously entered upon, may effect a perfect cure. Where these are impossible or inadvisable, the sufferer should spend his nights in a well-ventilated, large bedroom, and during the day should pass the whole time walking, sitting, or lying in the open air, protected from rain and wind by a veranda, or in one of the shelters used at sanatoria. While lying out in the open air, the sufferer must be particularly well wrapped up, especial care being taken to keep the hands and feet warm, because he is more than ordinarily liable to catarrh, which assists the spread of the disease.

Excessive exercises, like running or football, are bad for any case and tend to bring on hæmorrhage. The amount of exercise advisable depends greatly upon the nature of the individual case. At many sanatoria patients are graduated for exercise according to the length of time they have been in residence and the stage of their general symptoms.

Diet is one of the essentials of treatment. Not only must the quality of the food be good but the quantity must be as large as, or larger than, that taken in health, despite the fact that the sufferer exerts himself but little. Fat is particularly necessary, and three or four ounces in the form of butter, cream, cod-liver oil, salad dressing, or other soft fat may be taken daily in addition to that in the ordinary diet. Milk is perhaps the most valuable food, and various

artificial foods may be added to it, like plasmon, or somatose, or arrow-root, or a switched-up egg, to vary its insipidity. Some of the artificial milks may be tried when the patient becomes tired of cow's milk. Meat juices are excellent as stimulants, but must not take the place of nutritious food. With all this feeding, care must be taken that the patient be not fed beyond the limit of his digestive powers. If dyspepsia or diarrhœa appear, the food must be at once decreased in quantity.

Alcoholic stimulants are, on the whole, to be avoided in the early stages, but in the later stages they become necessary.

Medicines are given for many purposes in the disease. In the early stages tonics and substances like bitters, which stimulate appetite, are much used. Cough is quieted by various medicines, of which morphia, hydrocyanic acid, and heroin are the most used, or by inhalations of creosote, benzoin, menthol, etc. Pains of pleurisy in the side are relieved by painting with iodine, blistering, or strapping with belladonna plaster. Sweating is a very troublesome and almost constant complication. In the early stages it is relieved by the open-air treatment, or by a little easily digested food taken just before sleep.

Rest for the affected lung is of great importance. It is gained sufficiently in early cases by the gentleness of breathing maintained through general rest and careful avoidance of all violent movement. In advancing cases when one lung only is affected, this lung is often put temporarily out of use by introducing air into the pleural cavity (pneumothorax) so that the lung may shrink till it heals, when it is allowed to expand again. A similar resting condition for one lung is sometimes secured by dividing a nerve (phrenic) in the neck. More severe operations are also occasion-

CONTAGION

ally performed on the chest with good results.

Diarrhœa is due to various causes, and is treated by changing the diet, by astringents, and by morphia. It is, however, a serious symptom.

CONTAGION means the principle of spread of disease by direct contact with the body of an affected person, while by infection is meant the spread through the air or by other distant means.

CONTUSION (*see* BRUISES.)

CONVALESCENCE means the condition of gradual recovery through which a person passes after having suffered from some acute disease, and before complete health and strength are regained.

CONVULSIONS are rapidly alternating contractions and relaxations of the muscles, causing irregular movements of the limbs or body generally, and usually accompanied by unconsciousness. They form really only a symptom of some other trouble, often, in children, of a very trifling nature, but, on account of the alarm they cause and their occasional seriousness, they are treated of as a disease by themselves.

Causes.—Irritation in the bowels is perhaps one of the commonest exciting causes. This may be due to worms, to indigestion caused by unripe fruit, etc., and, in the case of breast-fed infants, to some impoverishment of the mother's milk. Irritation about the mouth from inflamed gums, due to teething, or the presence of thrush, is also very often the cause. Irritation in the ear, such as that due to wax, or in the nose from a foreign body, like a button pushed up by the child, is also sufficient cause. Even some discomfort or pain set up by the clothes may be the reason in very nervous children.

Excessive crying, excessive coughing as in whooping-cough, and the onset of some acute disease, like

COPAIBA

measles or scarlatina, may all be accompanied by convulsions.

Failing any obvious cause, rickets may be coming on, a tendency to convulsions being often one of the early signs of this disease. (*See* RICKETS.) Lastly, serious brain disease, such as meningitis, may, in a small number of cases, be the cause.

Treatment.—A warm bath for the legs and body, with cold cloths to the head, is the usual treatment. Great care must be taken that in the excitement of the moment the bath is not scalding hot. Generally a hot bath, especially if mustard be added to it, suffices to bring the child round, but, if the fit lasts for hours and is violent, it may be necessary to give an inhalation of chloroform. After the child has come out of the fit the cause is at once sought for. If the gums are inflamed they may be lanced, if some indigestible article of food has been taken an emetic is given, or the throat is tickled with a feather to make the child vomit, or a dose of castor oil may be administered. Very often rubbing in the bath, or cold applications in bed, along the spine, are of great value in stopping a long fit or a series of fits.

When an attack has passed off, means should be taken to prevent the recurrence of convulsions. Attention must be paid to the state of the gums, the regular movement of the bowels, and the general health of the child. Very nervous children may require some sedative like bromides, while others are benefited by cold or tepid bathing, according to the season, and by daily rubbing of the back and spine. In young children careful attention to the quality and quantity of the milk is essential.

COPAIBA, or **COPAIVA**, is a mixture of oil and resin in a thick yellow fluid, obtained by cutting into the bark of a South American tree.

It is used in various chronic inflammations of the urinary organs,

COPPER

and as an expectorant in chronic bronchitis.

COPPER is used in medicine in the two salts, sulphate of copper and nitrate of copper. The former is, in small doses, a powerful astringent, and in larger doses an irritant. Both are caustics when applied externally.

CORNEA is the clear membrane in front of the eye through which light passes to its interior.

CORNS and BUNIONS.—A corn is a localised thickening of the cuticle or epidermis, of a conical shape, the point of the cone being directed inwards and being known as the 'eye' of the corn. A general thickening over a wider area is called a 'callosity'. 'Bunion' is a condition found over the joint at the base of the great toe, in which not only is there thickening of the skin, but the head of the metatarsal bone, in consequence of bending outwards of the toe produced by pointed boots, becomes unduly prominent beneath the thickened skin. 'Hammer-toe' is a condition of the second toe, caused by short boots, in which the toe becomes bent at its two joints in such a way as to resemble a hammer, while corns form over the bends.

Causes.—The cause of bunions is the wearing of boots which are either too short, or are pointed in such a way as to force the great toe out of line towards the others. Corns are due similarly to the pressure of tight or badly fitting boots, or, when on the under surface of the foot, to unevenness in the sole. The skin grows more rapidly in consequence of the irritation, and becomes changed by the pressure into a species of horn. Where the corns are between the toes, they become moist and sodden, and are called soft corns.

Treatment.—The first requisite is to wear sufficiently large and properly shaped boots. The inner side of the sole should be straight, not cut away to a point, and the width of the sole at the level of the little toe should be

CORPULENCE

as great as that of the bare foot when the weight of the body is thrown on it. Relief from the pain of a corn may be obtained by wearing a ring of felt (corn plaster) round the corn, so as to free it from pressure and distribute the pressure of the boot over the surrounding skin. To remove the corn, the foot should be soaked in hot soapy water, and the corn then cut or scraped away with a knife or pair of scissors. After drying, the site of the corn should be covered with a small piece of soap plaster or painted inside the felt ring with salicylic acid collodion. This consists of salicylic acid (8 parts), extract of cannabis indica (1 part), and flexile collodion (60 parts). This preparation softens and breaks up the corn, which may be picked away gradually or rubbed down with pumice-stone. After the corn is removed, the skin of the foot should be hardened by daily bathing for some time in salt water or in spirit. A tendency to bunions, flat foot, and corns can sometimes be checked by wearing boots of which the sole is slightly thicker along the inner side than on the outer side.

Soft corns and the deformities of bunion and hammer-toe should be treated by wearing socks made like gloves with a compartment for each toe, or in slighter cases by inserting a piece of boracic lint each morning in the spaces between the toes. In bad cases of bunion the opening of the boot should run forwards to between the first and second toes, where a peg known as a 'toe-post' is fixed to the sole in order to keep the great toe in its proper place; or a rubber pad may be worn between the toes. In old-standing cases of bunion and hammer-toe an operation in which the protruding toe-joint is excised may be necessary for cure.

CORPULENCE, or OBESITY, is a condition of the body characterised by over-accumulation of fat under the skin and around certain of the internal organs. In all healthy

CORPULENCE

persons a greater or less amount of fat is present in these parts, and serves important physiological ends, besides contributing to the proper configuration of the body. Even a considerable measure of corpulence, however inconvenient, is not inconsistent with a high degree of health and activity, and it is only when in great excess or rapidly increasing that it can be regarded as a morbid state.

For some persons, and particularly among some races, a degree of corpulence is natural, and though the following table represents the average weight and chest measurement for men at thirty years of age, of varying height, it must be accepted as true for health only with a wide margin. A person's weight may be one-seventh over the figures given and yet within the limit of health, while, on the other hand, if the weight is not more than one-seventh below the average weight this is not indicative of bad health. The average woman should weigh rather less for her height than the figures shown in the table. The heights are given without shoes.

Height	Weight	Chest Circumference
ft. in.	st. lb.	in.
5 2	9 0	35
5 3	9 7	35
5 4	9 13	36
5 5	10 2	37
5 6	10 5	37½
5 7	10 8	38
5 8	11 1	38½
5 9	11 8	39
5 10	12 1	39½
5 11	12 6	40
6 0	12 10	40½
6 1	13 0	41

The average weight of the clothing is $\frac{1}{4}$ of the male body, and the above weights include clothing. An addition of about three pounds for every four years of age over thirty must be made to the above figures, as the weight tends naturally to increase until old age sets in. (See WEIGHT AND HEIGHT.)

CORPULENCE

Causes.—A luxurious, inactive, or sedentary life, with over-indulgence in sleep and absence of mental occupation, are well-recognised predisposing causes. The more immediate exciting causes are over-feeding and the large use of fluids of any kind, but especially alcoholic liquors. Fat persons are not always great eaters, though many of them are, while again, leanness and inordinate appetite are not infrequently associated. Still, it may be stated generally that indulgence in food, beyond what is requisite to repair daily waste, goes towards the increase of fat. This is more especially the case when the fatty, sugary, and starchy elements of the food are in excess. Alcoholic liquors, when taken to a considerable extent, also tend to the formation of fat, partly because many of them, *e.g.* beer, contain much sugar, and partly no doubt because a portion of the body heat is derived from the alcohol and a corresponding amount of the starchy and sugary food spared, and converted into fat.

Women are prone to become more corpulent than men, and appear to take on this condition more readily after having borne a child, and after the cessation of the function of menstruation. Probably their more sedentary life, and the fact that a woman's blood is relatively poorer in oxidising power than that of a man, have much to do with this. For the same reason, girls suffering from bloodlessness tend to become fat as well as pale and weak.

In young persons excessive corpulence is sometimes associated with defective action of some of the endocrine glands, especially the pituitary and thyroid glands. In slighter cases of such defect the gland usually gains its full development as life advances, and the corpulence passes off when adult age is reached.

Defective muscular exertion has been mentioned as a cause of corpulence, but it is sometimes observed

that stout men, when they begin to take active exercise, become fatter still, the reason being that the appetite is sharpened and still more food is taken.

Symptoms.—Health cannot be long maintained under excessive obesity, for the increase in bulk of the body, rendering exercise more difficult, leads to relaxation and defective nutrition of muscle, while the accumulations of fat in the chest and abdomen occasion serious embarrassment to the functions of the various organs in these cavities. In general, the mental activity of the highly corpulent becomes impaired, although there have always been notable exceptions to this rule.

In fat people the tissues of the body generally are of poor quality. The corpulent are at least as liable as the spare to be attacked by acute diseases, and they succumb much more readily to them than do the latter. A fever or other sharp illness is, however, sometimes beneficial to a corpulent person, in so far as it reduces his unnecessary fat, and enables him to make a fresh start, and, by judicious means, prevent its re-accumulation. Gout and diabetes are apt to arise in stout and overfed people. Various skin conditions, such as eczema, and particularly a chafed and painful condition of the skin at folds where two surfaces meet (*see* CHAFING), are also troublesome.

Treatment.—For the prevention of corpulence and the reduction of superfluous fat, many expedients have been resorted to, and numerous remedies recommended. These have embraced such regimen as bleeding, purging, starving, the use of different kinds of baths, and of drugs innumerable, most of which means have been found to fail in accomplishing the desired object.

Some drugs have been successfully used. Among these, iodide of potassium forms the basis of several proprietary remedies. Iron in various

forms is essential in those forms of corpulence found particularly in young women and caused by anæmia, and its administration, accompanied by the other means requisite for this condition, is quickly attended by good results. Extract of thyroid gland is the remedy necessary in the disease known as myxœdema, and in some cases of corpulence related apparently to this disease its use has been of great benefit.

Of far greater importance than any drugs is the question of the regulation of habits as to diet, exercise, and sleep. In 1863 a pamphlet appeared, entitled *A Letter on Corpulence, Addressed to the Public* by William Banting, in which was narrated the remarkable experience of the writer in accomplishing the reduction of his own weight in a short time, by the adoption of a particular kind of diet. After trying almost every known remedy without effect, he placed himself upon an entirely new form of diet, which consisted chiefly in the removal, as far as possible, of all sugary, starchy, and fat food, the reduction of liquids, and the substitution of meat or fish and fruit in moderate quantity at each meal, together with the daily use of an antacid draught. Under this regimen his weight was reduced 46 lb. in the course of a few weeks, while his health underwent a marked improvement. Mr. Banting's experience induced many to follow his example, and in numerous instances the effects were all that could be desired. Such a rapid loss of weight is, however, apt to be attended with serious impairment of health, and, generally speaking, it is not advisable to aim at losing weight at a greater rate than about three or four pounds in each week.

The articles of diet (*see* DIET) which are admissible to a person striving to reduce his excess of fat include the following: lean meat, fish, sweetbread, clear soup, fowls, game, eggs,

CORPUSCLE

cheese, green vegetables, fresh fruit, toast, skimmed milk, and buttermilk which has been specially recommended by some. Alcohol should be avoided, and tea and coffee partaken of sparingly. The following is the type of diet prescribed during a 'cure' of a moderate nature :

Breakfast.—Tea, without sugar or milk ; toast, 2 oz. ; lean meat, 1 oz.

Dinner.—Bouillon, $\frac{1}{2}$ pint ; lean meat, 6 oz. ; green vegetables ; bread, 1 oz. ; fresh fruit ; glass of water, buttermilk, or thin wine.

Tea.—Tea or coffee, without sugar or milk ; toast, 2 oz.

Supper.—Cold meat, 6 oz. ; toast or biscuit, 1 oz.

The exercise should be abundant, and the clothing should be light when an attempt is made to reduce corpulence, but care must be taken that the food is not at the same time increased to satisfy the sharpened appetite, or the effect of exercise is defeated. The sleep is a matter of importance. The person should go to bed early, and should limit the duration of rest to seven or at most eight hours, while the habit of sleeping during the day should be broken off.

CORPUSCLE means a small body. *See BLOOD.*)

CORROSIVES are poisonous substances which corrode or eat away the mucous surfaces of mouth, gullet, and stomach with which they come in contact. Examples are strong mineral acids, caustic alkalies, and some salts like chlorides of mercury and zinc.

For treatment see table under **POISONS.**

CORROSIVE SUBLIMATE, or **PERSULFIDE OF MERCURY**, is a powerful antiseptic and a corrosive poison. It is not to be confounded with subchloride of mercury, or calomel. (*See ANTISEPTICS, DISINFECTION, MERCURY.*)

CORYZA is the technical name of 'cold in the head'.

CRAMP

COSTAL means anything pertaining to the ribs.

COSTIVENESS (*see* **CONSTIPATION**).

COTTON-WOOL is a downy material made from the hairs on cotton plant seeds. The natural cotton is oily, non-absorbent, and is used for padding. Absorbent cotton, which has been purified and sterilised, is used for dressings.

COUGH is due to a variety of causes. For example, there is the racking cough of consumption, the barking cough accompanying irritation of the larynx or its nerves, the short dry cough due to tonsillitis or an elongated uvula or wax in the ear, the thick glutinous cough of dyspepsia, the nervous coughs of hysteria, whooping-cough, etc. (*See BRONCHITIS, CHILLS AND COLDS, CONSUMPTION, THROAT DISEASES, etc.*)

COUNTER-IRRITANTS (*see* **BLISTERS AND COUNTER-IRRITANTS**).

CRAB-LOUSE is a louse that infests the pubic region. (*See INSECTS.*)

CRAMP is a painful spasmodic contraction of muscles, most frequently occurring in the limbs, but also apt to affect certain internal organs.

TEMPORARY CRAMP.—In its most common form, that of cramp in the limbs, this disorder comes on suddenly, often during sleep, the patient being aroused by an agonising feeling of pain in the calf of the leg or back of the thigh. During the paroxysm, the muscular fibres affected can often be felt gathered up into a hard knot. The attack in general lasts but a few seconds and then suddenly departs, the spasmodic contraction of the muscles ceasing entirely ; or, on the other hand, relief may come more gradually during a period of minutes or even hours. A liability to cramp is often associated with a rheumatic or gouty tendency, but occasional attacks are common enough apart from this, and

CRAMP

are often induced by some peculiar posture which a limb has assumed during sleep. Exposure of the limbs to cold will also bring on cramp. It is likewise of frequent occurrence in the process of parturition.

Treatment.—This painful disorder can be greatly relieved and often entirely removed by firmly grasping or briskly rubbing the affected part with the hand, or by anything which makes an impression on the nerves, such as the application of some cold substance to the part, or occasionally by warmth. Even a sudden and vigorous movement of the limb, in such a direction as to stretch the affected muscle, will often succeed in terminating the attack.

CRAMP OF SWIMMERS includes usually spasm of the arteries as well as of the muscles due to cold and exertion, so that death is apt to occur from stoppage of the heart. If treatment can be applied, friction of the limbs, warmth, and hot drinks are essential.

CRAMP OF THE STOMACH, or **GASTRALGIA**, usually is a symptom in connection with some form of gastric disorder such as gastric ulcer (*see* **STOMACH, DISEASES OF**). For cramp affecting the muscular wall of the bowels see **COLIC**.

HABIT SPASMS, or **FUNCTIONAL SPASMS**, are liable to occur in individuals of many handicrafts, and are often extremely troublesome.

Writer's Cramp, *Telegraphist's Cramp*, etc., is a spasm which affects certain muscles when engaged in the performance of acts, the result of education and long usage, and which does not occur when the same muscles are employed in acts of a different kind.

The symptoms are in the first instance a gradually increasing difficulty experienced in conducting the movements required for executing the work in hand. Taking, for example, the case of writers, there is a feeling that the pen cannot be

CRAMP

moved with the same freedom as before, and the handwriting is more or less altered in consequence. At an early stage of the disorder, the difficulty may be to a large extent overcome by persevering efforts, but ultimately, when the attempt is persisted in, the muscles of the fingers, and occasionally also those of the forearm, are seized with spasm or cramp, so that the act of writing is rendered impossible. Sometimes the fingers, instead of being cramped, move in a disorderly manner and the pen cannot be grasped, while in other rare instances a kind of paralysis affects the muscles of the fingers, and they are powerless to make the movements necessary for holding the pen. It is to be noted that for all other movements the fingers and arms possess their natural power. Similar symptoms are observed and similar remarks apply in the case of musicians, typists, telegraphists, artists, composers, seamstresses, tailors, and many mechanics in whom this affection may occur.

Spasmodic wry-neck is one of the most frequent forms which the disease takes. This comes on in shoemakers, tailors, and persons generally whose employment necessitates their following, with the head, movements which the hands are making. The result is that the muscles of the neck assume the unpleasant habit of drawing the head forcibly to one side whenever the slightest attempt is made to turn and look at anything. Indeed, although actually a rare disease, no muscle or group of muscles which is specially called into action in any particular occupation is exempt from liability to this functional spasm. Hence the cause has been ascribed to over-use of the parts concerned.

Treatment.—In the treatment of habit spasms, the only effectual remedy is absolute cessation for a time (a month or more) from the work with which the attack is associated. It is sometimes recommended

CRANIUM

that the opposite hand or limb be used so as to afford the affected part entire rest, but this may be followed by the extension of the disorder to that locality also. Various types of electrical application have been tried and have, in some cases, been attended with at least temporary benefit. (See **ELECTRICITY IN MEDICINE**.) Where the spasmodically acting muscles are not of great importance to the bodily economy, their action can be controlled by division of their nerves of supply. For example, spasmodic wry-neck can be checked by division of the spinal accessory nerve on one side of the neck. Such a procedure is, of course, out of the question in the case of the hand.

CRANIUM means the part of the skull enclosing the brain as distinguished from the face.

CREAM is the oily or fatty part of milk from which butter is prepared. Average cream when purchased contains about 18 per cent of fat. A food known as '20 per cent cream' is much used by diabetics, and consists of the upper 4 oz. skimmed off a quart of milk which has stood for twenty-four hours.

CREAM OF TARTAR is another name for bitartrate of potassium.

Imperial Drink consists of a teaspoonful of cream of tartar, a squeeze of lemon, two lumps of sugar, and a pint of cold water.

CREOLIN is a coal-tar product, useful for removing smells, if a few teaspoonfuls be added to a pint of water and the mixture be sprinkled on floors, etc. It has a powerful antiseptic action.

CREOSOTE, or **CREASOTE**, is a clear, yellow liquid, of aromatic smell and burning taste.

It is a powerful antiseptic and disinfectant. It has also a soothing action upon parts with which it is brought into contact.

Creosote is an ingredient of some disinfectant fluids; it is also used in the form of a vapour, containing

CRETINISM

creosote 80 drops, light carbonate of magnesia 30 grains, water 1 ounce, of which a teaspoonful is added to a pint of hot water and inhaled in cases of suppurating throat, foetid breath, etc.

CREPITUS means a grating sound like that made by rubbing the hair between the fingers. It is found in cases of fractured bones when the ends rub together; also in cases of severe chronic arthritis by the rubbing together of the dried internal surfaces of the joints.

CRESOL, or **METHYL PHENOL**, is an oily liquid obtained from the tar distilled out of coal, beech-wood, or pine. It is a powerful antiseptic and disinfectant.

It is used combined with soap to form a clear fluid which can be mixed with water in any proportions. For the disinfection of linen, bed-pans, drains, or surgical instruments a convenient strength is 2 per cent (one tablespoonful to $1\frac{1}{4}$ pints of water); for washing the hands 1 per cent (one tablespoonful to $2\frac{1}{2}$ pints).

CRETA is a Latin name for chalk. It is used especially in the form of *mistura cretæ*, or chalk mixture, to check diarrhoea, in doses of a tablespoonful or more, repeated as often as necessary.

CRETINISM is a peculiar form of idiocy which develops among the children in certain localities, possibly in consequence of atmospheric and geographical conditions which are not well understood, and in association with hereditary predisposition and unsuitable diet. Not only is the mind feeble, but the whole body remains undeveloped, and there are deformities of the bones, changes in the thyroid gland, and a swollen condition of the skin. The defect in the thyroid gland is believed to be responsible for most of the other bodily and mental peculiarities. The affected child rarely reaches middle age.

CROTON OIL

CROTON OIL is a powerful purgative, producing copious watery evacuations, and, in large quantities, acting as an irritant poison.

In apoplexy, delirium tremens, and head injuries, where it is wished to produce a copious motion rapidly, one drop of croton oil is given on a lump of sugar, or mixed with a few drops of olive oil or of milk, and generally acts within an hour. Externally, croton liniment forms an excellent counter-irritant, applied to the chest in chronic bronchitis.

CROUP is a disease of childhood commonest during the second and third years of life, in which sudden difficulty of breathing appears with partial suffocation.

The larynx of the young child is very small, and at the vocal cords the passage for the air is contracted to a space about $\frac{1}{4}$ inch long by $\frac{1}{8}$ inch wide. At this point blockage is very liable to occur as the result of inflammation or of spasm.

Symptoms.—In croup, which must be distinguished from diphtheria, a much more serious condition, the child awakens during the night with a cough and noisy, crowing breathing. There is slight feverishness, and the little patient may appear frightened and livid. The child may have two or three attacks on the same night or on the following night, and the condition is apt to recur whenever he catches cold.

Sometimes the condition is purely a nervous spasm of the throat, especially in children who show signs of rickets.

Treatment.—The child should have a warm drink and warm fomentations may be applied to the outside of the neck. A hot bath given under a blanket, which retains a steamy atmosphere about the patient, often relieves the breathing quickly. A dose of ipecacuanha wine (1 teaspoonful) to bring about vomiting is also helpful in relieving the condition.

In the cases associated with rickets,

CUT-THROAT

this disease should afterwards receive appropriate treatment.

CRURAL means something connected with the leg.

CUBEBS is a fruit used similarly to copaiba.

CUPPING is used in cases of deep-seated congestion to draw blood to the surface. It undoubtedly gives great and immediate relief in difficulty of breathing due to asthma, bronchitis, and heart disease, and relieves congestion of the kidneys in acute Bright's disease. Cupping is of two kinds, *dry-cupping* and *wet-cupping*. To dry-cup, one takes a cupping-glass (or an ordinary thick glass tumbler), puts a few drops of methylated spirit upon a fragment of blotting-paper into it, ignites this, and, while it is still burning, claps the mouth of the glass tightly on the back of the patient. A vacuum is produced, and the skin swells up into the glass as blood rushes into its small blood-vessels. This is repeated four, six, or eight times in different places. Wet-cupping is still more effectual. The skin is first dry-cupped, the swollen skin is next scarified with a lancet or a special instrument for the purpose, and then the cupping-glass is again applied, and blood drawn off into it. Wet-cupping is often used to relieve congestion of the kidneys. The vacuum for dry- or wet-cupping may also be produced by a suction bulb.

CUTANEOUS means belonging to the skin. (*See SKIN DISEASES.*)

CUTICLE (*see SKIN*).

CUTS (*see WOUNDS*).

CUT-THROAT is an injury which may be due to suicide or murder, an expert being able to tell at a glance the one from the other. Death, when it occurs at once, is usually due to bleeding from the large vessels of the neck, and later may be caused by inflammation resulting in the air passages. Another great danger attending wounds of the throat consists in the entrance of air into the

CYANIDES

large veins in such amount as to bring the circulation of the blood to a standstill. In a case of cut-throat, if any vessel be seen to bleed, the hæmorrhage should be checked by pressure with the finger till surgical assistance can be got. The divided issues are then stitched carefully in layers.

CYANIDES are salts of hydrocyanic or prussic acid. They are highly poisonous, and are also powerful antiseptics. (See WOUNDS.) Double cyanide of mercury and zinc is specially powerful as an antiseptic used to impregnate gauze and cotton-wool for dressing wounds.

CYANOSIS is a condition of blue-

CYSTS

ness seen particularly about the face and extremities, accompanying states in which the blood is not properly oxygenated in the lungs. It may be due to difficulty of breathing or to heart disease.

CYSTITIS means inflammation of the bladder. (See BLADDER, DISEASES OF.)

CYSTOSCOPE is an instrument for viewing the interior of the bladder.

CYSTS are hollow tumors containing fluid or soft material. They are almost always simple in nature and seldom return after removal, though in the case of certain types there are apt to be several of various sizes.

D

DACTYLITIS means inflammation of a finger or toe.

DAMP is the name applied generally by miners to noxious gases in a mine. 'Fire damp' is an explosive mixture of gases, chiefly marsh gas. 'After damp' or 'white damp' is the term applied to carbon monoxide. 'Choke damp' and 'stink damp' are terms applied to an evil-smelling mixture of gases following the use of explosives containing sulphuretted hydrogen and other irritating compounds. 'Black damp' is the name applied to the stagnant air of old workings and wells from which the oxygen has disappeared and which consists of nitrogen and carbon dioxide. (*See VENTILATION, COAL GAS, ASPHYXIA.*)

DANDELION (*see TARAXACUM*).

DANDRIFT (*see BALDNESS*).

DANGEROUS DRUGS.—This term is applied to certain drugs which are scheduled under the Dangerous Drugs Act, and which must be dispensed only under certain stringent regulations. These include morphine, cocaine, ecgonine, diamorphine (commonly known as heroin), extracts and tinctures of Indian hemp and opium, as well as any preparation containing one part in 500 or more of morphine or one part in 1000 or more of cocaine, ecgonine or diamorphine. Certain preparations of opium are exempted, such as opium plaster, liniment of opium, Dover's powder and ointment of galls and opium, and hospitals are also exempted from the provisions of the regulations in regard to these drugs. Prescriptions containing any of these drugs must be written, dated and signed by a practitioner, and must give the name and address of the person for whom the prescription is intended, as well as the total amount of the drug to be supplied.

All other poisonous substances are scheduled in two classes: (1) those containing the more deadly poisons, which may not be sold by chemists

except to persons known to the seller, and regarding which the name and address of the purchaser must be entered in a book; (2) less deadly poisons, including various disinfectants, which must be labelled with the word 'poison' when they are sold.

DEAD FINGERS (*see CIRCULATION, DISORDERS OF*).

DEADLY NIGHTSHADE is the popular name of belladonna, from which atropine is procured. Its black berries are not infrequently eaten by children. (*See ATROPINE.*)

DEAFNESS, although generally due to some trouble in the ear, is of many different types, and is an unfortunate complaint in that few cases of long standing admit of great benefit.

Varieties and causes.—Deafness is divided into three classes, according to the section of the ear at fault, and this division is of great practical importance, because, while the external ear is readily accessible for examination and treatment, the middle ear requires most delicate manipulation, and the internal ear is beyond the reach of any remedies other than general ones.

EXTERNAL EAR is the passage, about $1\frac{1}{2}$ inches in length, leading inward from the surface to the drum. When the deafness has its cause in this part, it is due simply to obstruction of the passage by a foreign body, such as a pea, or a polypus, or, most commonly of all, by a plug of hardened wax. In fact, the vast majority of cases of deafness, accompanied by ringing in the ear, are due to the presence of wax.

MIDDLE EAR is the drum or tympanum separated by the tympanic membrane from the outer ear, and communicating with the Eustachian tube, which leads to the throat. This communication is important, because the connection with the throat explains the deafness that accompanies cold in the head, and other forms of inflammation, which spread from the nose and throat up

DEAFNESS

into the middle ear. Acute inflammation in the throat, for example in scarlatina and measles, or chronic conditions like adenoids in children, are very liable to produce middle-ear disease, perforation of the drum, and deafness. Tearing of the drum in consequence of a blow on the ear, or of an explosion, as a rule heals and leaves no deafness; but a perforation, following inflammation in the middle ear, is accompanied by suppuration, discharge from the ear, and other changes, and generally attended by impairment of hearing. When fat people become deaf, the condition is sometimes due to a deposit of fat actually pressing on the Eustachian tube, and preventing the entrance into the middle ear of air, which is necessary for good hearing. It is a peculiarity of deafness in middle-ear disease, that the hearing is often better during a loud noise; for example, a conversation is more clearly heard while church bells are ringing, or in the noise of a railway train.

INTERNAL EAR AND BRAIN constitute the perceptive apparatus for sound. Boiler-maker's disease is a condition of deafness, due apparently to a gradual wearing out of this nervous mechanism by the constant noise of hammering, and comes on in a few years, especially in boiler-makers, but also in sawyers, threshing-mill tenders, and persons similarly subject to constant noise. Hereditary deafness comes on in several members of some families about middle life, owing to hardening changes in the middle ear or inner ear, and practically defies all treatment.

Treatment.—Deafness due to causes in the external ear is readily dealt with, and, considering the frequency of hardened wax, it is a good and safe procedure to syringe out the ear with a tumblerful of warm water containing a teaspoonful of baking-soda (bicarbonate). The stream of water is directed along the upper wall

DEAFNESS

of the passage and flows out below. In cases where deafness accompanies nasal catarrh, adenoids, enlarged tonsils, etc., these conditions must be remedied by nasal douches, gargles, operation, etc. (*See NOSE, DISEASES OF.*) In a case of perforation of the drum, accompanied by a chronic discharge, particular care must be taken to keep the ear clean, because there is otherwise a danger not only of increased deafness but of retained matter infecting some neighbouring part, and causing dangerous abscess in the brain, meningitis, or suppuration in the mastoid antrum. (*See EAR, DISEASES OF.*) Boiler-maker's deafness generally improves if the occupation be changed, otherwise it grows steadily worse. Deaf-mutism is a condition where deafness has been complete from early life, usually from birth, and the child has never learned to speak, though its voice-producing organs are perfect. Such children may, with patience, be taught to carry on a fluent conversation by means of 'lip-reading', or by the finger language and signs. (*See DUMBNESS.*)

Various aids to hearing have been devised for use in middle-ear deafness. Speaking-tubes and trumpets give some help. Artificial drums are extremely useful in certain cases, especially where there is a large perforation, and one of the best consists simply of a piece of tightly rolled cotton-wool, pushed in so as to rest lightly on the remains of the drum. An audiphone, which is a fan-like instrument made of vulcanite that is placed against the teeth in order to send the sound-waves through the bones of the head direct to the ear, is very useful now and then. Recently various instruments have been produced consisting of microphone receiver, electric battery, and a telephone ear-piece by which the voice of any one addressing the deaf person is magnified so as to be clearly heard. These instruments are highly successful in the case of many

DEATH, SIGNS OF

deaf persons, though not of great use in others. Each instrument requires to be carefully tuned for the deaf person using it.

DEATH, SIGNS OF.—Most important for the immediate recognition of death are *stoppage of the heart* for a couple of minutes, as listened for by placing the ear on the chest at the inner side of the left nipple, and *cessation of breathing*, as noted by observing that a mirror held before the mouth shows no haze, that a feather placed on the upper lip does not flutter, or that the reflection on the ceiling, from a cup of water placed on the chest of the dead person, shows no movement. An important sign is that if a cut be made in the skin or a vessel be opened, no bleeding takes place after death.

DEBILITY means a state of weakness, in which the body or one of its systems become unable to bear strains put upon it, or even, in severe cases, to discharge the ordinary functions of life.

DECOCTION is the name for a preparation made by boiling various plants in water and straining the fluid. Examples are decoction of broom-tops, of cinchona, and of sarsaparilla. The dose of all is from one to several tablespoonfuls.

DEFÆCATION means the act of opening the bowels. (See CONSTIPATION, DIARRHŒA.)

DEFORMITIES may be present at birth, or they may be the result of injuries, of disease, or simply produced by bad habits, like the curved spine occasionally found in children.

A description of some of the commoner deformities and their treatment will be found under CHEST, DEFORMITIES OF; CLUB-FOOT; FLAT-FOOT; KNOCK-KNEE; PALATE, DEFECTS OF; PARALYSIS; RICKETS; SPINE, DISEASES OF; JOINTS, DISEASES OF.

DEGENERATION means a change in structure or in chemical composition of a tissue or organ by which its

DELIRIUM

vitality is lowered or its function interfered with.

DEGLUTITION means the act of swallowing. (See CHOKING.)

DELIRIUM is a state of perverted consciousness in which an irregular discharge of nervous energy goes on, causing incoherent talk, delusions, and ill-regulated muscular action.

Varieties.—There are three types:

Low DELIRIUM is associated with exhaustion, and consists mainly of muttering or rambling talk, in which past events are jumbled together. Surrounding persons and objects are not heeded, or their identity is totally mistaken. The fingers are sometimes busily employed in picking at the bedclothes, or there is a constant twitching of the muscles in the arms, legs, and face, which is a sign of great weakness.

TREMBLING DELIRIUM (delirium tremens) is the form most commonly due to alcoholism. (See ALCOHOLISM, ACUTE.) In this form the mind is more active and delusions more extraordinary. Trembling is a specially marked feature, particularly in the early stages.

RAVING DELIRIUM sometimes appears in acute fevers, often is due to alcoholism, and is characterised by violent activity of the muscular system, acting in response to such wild delusions that it may result in suicide or homicide. A special variety of this type of delirium, associated with great anxiety or fear, is found in persons suffering from impending heart failure, the patient being in a state of fear of some impending disaster, although he does not know exactly what he fears.

Treatment is, as a rule, the treatment of the fever, etc., which causes the delirium. As the delirium in fevers is due partly to high temperature but mainly to nervous exhaustion, good feeding, careful nursing, and stimulants are specially necessary. When delirium banishes sleep and aggravates exhaustion, sleeping

DELIVERY

draughts are often necessary, such as a mixture of bromide and chloral, chloralamide, bromidia, and in severe cases even morphia or hyoscine. (See also ALCOHOLISM, ACUTE.)

DELIVERY means the final expulsion of the child in the act of birth. (See LABOUR.)

DELUSIONS are errors in judgment, regarding simple facts, which interfere with the ordinary conduct of life. Thus a man may have the delusion that he has no stomach and refuse to take food. No amount of argument or demonstration will convince the subject of a delusion as to the error of his belief. The existence of a delusion, of such a nature as to influence conduct seriously, in the mind of a mentally disordered person, is one of the most important signs in certifying the case as one of insanity.

DEMENTIA is a form of insanity consisting of mental feebleness rather than derangement. It may come on acutely after some trouble like influenza, but, as a rule, is chronic, and often succeeds other forms of insanity like melancholy and mania. Dementia is one of the changes almost natural in old age, and, whatever be the cause, it is one of the least hopeful forms of insanity. (See INSANITY and GENERAL PARALYSIS.)

DEMULCENTS are substances which exert a soothing or protective influence upon the surface of the alimentary canal.

Mucilaginous substances like gum, singlass, Iceland moss; oils like olive, linseed, and almond oils; starchy substances like arrowroot; also glycerin, borax, and mild alkalies, and fine powders like subnitrate of bismuth, are used for this purpose when inflammation or irritation is present.

DENGUE, also called BREAK-BONE FEVER, DANDY-FEVER, and THREE-DAY FEVER, is a disease of hot climates all round the world, in India, Asia Minor, West Indies, America,

DEPILATION

Australia, etc. It is a sudden and short infectious fever, characterised mainly by swelling and pains in the joints, and by eruptions.

DENTITION (see TEETH).

DEODORANTS are substances which remove or lessen objectionable odours. Some, which have a powerful odour, simply cover other smells, but the most effective act by giving off oxygen, so as to convert the objectionable substances into simple and harmless ones.

Volatile oils of plants, such as eucalyptus and turpentine, chlorine water, and chlorinated lime, peroxide of hydrogen, charcoal, dry earth, sawdust, and permanganate of potassium, are among the most powerful.

Their main use is to purify sewage, bilge-water, and water-closets. Many powerful deodorants act, at the same time, as disinfectants. They are also used in sick-rooms to cover the smell of discharges, and the like. For the manner of use see under the individual deodorants.

DEPILATION is the process of destroying hair; substances and processes used for this purpose being known as depilatories. The purpose may be effected in three ways: (1) by removing the hairs at the level of the skin surface; (2) by pulling the hairs out (epilation); (3) by destroying the roots and so preventing the growth of new hairs.

The hair may be, as every one knows, removed from the surface by shaving, but, in the case of women, this method is unfortunate, because the growth becomes more and more bristly. A more effective means, which, however, causes irritation to the skin if it be too often repeated, consists in applying over the hairy surface a paste consisting of barium sulphide (1 part), zinc oxide (3 parts), starch (4 parts); or a stronger but more irritating mixture may be made of barium sulphide and wheat starch in equal parts. This is made into a

DERBYSHIRE NECK

cream-like paste with water, smeared on with a paper-knife, and then scraped off by means of the same instrument, all the hairs coming with it. The skin is then washed carefully, and smeared with cold cream or lanolin. This method also stimulates subsequent growth.

If the hairs be pulled out, the roots are not destroyed, and stronger hairs arise in time in the same places. The hair can also be caused to fall out and leave a smooth surface by exposure to X-rays, but there is often a considerable amount of inflammation of the skin, and in any case the hair subsequently grows again, as the roots are not destroyed.

The roots can be completely destroyed by electrolysis. This process is very tedious, as only a few hairs can be removed at each sitting, owing to the pain and swelling produced, and it requires great delicacy of manipulation.

DERBYSHIRE NECK is a name for goitre, which is fairly common in that part of England. (See GOITRE.)

DERMATITIS means any inflammation of the skin, though the name is usually restricted to those affections in which the cuticle comes off in large flakes, leaving a red surface behind. (See SKIN DISEASES.)

DESQUAMATION means the scaling off of the superficial layer of the cuticle, particularly after scarlatina.

DETERGENTS are substances which clean the skin surface, such as water, soap, alcohol, alkalis, turpentine, sand, sawdust, and borax.

DETOXICATION means reduction or removal of the toxic properties of poisons or remedies.

DEVONSHIRE COLIC is caused by drinking cider which has been stored in contact with lead, so that colic comes on as a result of lead poisoning. (See LEAD POISONING.)

DEXTRIN is a soluble substance into which starch is converted by diastatic ferment or by dilute acids. It is a white or yellowish powder

DIABETES

which, dissolved in water, forms mucilage.

DEXTROSE is another name for grape sugar or glucose.

DIABETES is a disease characterised by a habitually excessive discharge of urine. Two forms of disease have received this name, *Diabetes mellitus* or *glycosuria*, in which the urine is not only greatly increased in quantity but contains glucose or grape sugar, and *Diabetes insipidus* or *polyuria*, in which the urine is simply increased in quantity and contains no abnormal ingredient.

DIABETES INSIPIDUS is characterised by constant thirst and an excessive flow of urine, which, however, is not found to contain any abnormal constituent. The disease is in general very slow in its progress. In some cases the health appears to suffer very slightly.

DIABETES MELLITUS is a constitutional disorder in which the power of the muscles and other tissues to assimilate sugar circulating in the blood for purposes of nutrition is greatly diminished or lost. In consequence of this weakness, various other symptoms appear, while the sugar accumulates in the blood and is excreted in the urine and lost to the system.

It ought to be mentioned that small quantities of sugar are frequently found in the urine in many diseases, and even in health after excessive quantities of food rich in starch or sugar have been eaten. The average individual can assimilate only about half a pound of sugar at one time, some individuals much less; and, if more be taken, traces at least are discoverable in the urine. Habitual excess in this type of food seems gradually to strain the power of the tissues to absorb sugar, or the power of the pancreas to manufacture insulin, with the result that persons who eat to excess, especially as regards sugary and starchy foods, tend ultimately to develop diabetes. Dia-

DIABETES

betes is therefore much more prevalent during middle age in corpulent people than in persons of average physique.

Symptoms.—The symptoms of diabetes are usually very gradual in onset, and the disease is often discovered by chance before the patient complains of any definite symptoms. The first symptoms which attract attention are usually failure of strength and loss of weight along with great thirst and passage of an increased amount of urine. In consequence of the drying up of the other secretions, dryness of the skin and mouth are frequent complaints. Eye troubles also appear. The patient becomes thinner and suffers from increasing muscular weakness; the temperature is lowered and dyspepsia and constipation are commonly present; the teeth frequently decay. Owing to the poor vitality of the tissues, various skin eruptions appear, boils and carbuncle being especially common, and, in fact, sometimes giving the first sign of the presence of disease. The sugar deposited from the urine is very liable to cause itching about the groins, and eczema of various parts of the body is set up by the presence of sugar in the sweat. The skin, as the disease advances, becomes dry and harsh with a peculiar papery consistency. There is a special tendency to gangrene of the skin of the feet, commencing with the toes, and this forms a very serious complication of diabetes and a not uncommon form of fatal issue.

Diabetes, as a rule, advances comparatively slowly except in the case of young people, in whom its progress is apt to be rapid. Indeed in a general way it is more serious the younger the subject of the disease.

Cases may continue for many years without material change for the worse, and sometimes, especially in cases where great care is taken with the diet, complete cure apparently takes place.

DIABETES

The most unfavourable cases are those in young persons, also cases in which serious chest or other complications have arisen and cases in which the disease has already become of severe and established character before it is recognised.

Treatment.—From what has been said as to the onset of the disease being associated with habitual excess of food and with a corpulent physique, it is evident that diet is a matter of the first importance. Special care must be taken to cut down the sugary and starchy foods, and the following are *forbidden articles* or at least must be taken very sparingly: sugar, bread, potatoes, cereal and farinaceous foods, tapioca, sago, arrowroot, thick soups, liver, beer, wines, sweet drinks, and most sweet fruits. Protein foods such as meat, fish, eggs, and strong meat soups are, generally speaking, permissible, but even these protein materials must be very much limited. Fats, on the other hand, such as cream, butter, and olive oil, form both a diet of strong nutritive value and are, in general, not liable to the disadvantages which accompany the taking of carbohydrates and of proteins in large quantity. The amount of fat, however, must in most cases bear a certain relation to the amount of carbohydrate which is taken, and, generally speaking, the fat must not be more than double, or at most treble, the amount of carbohydrate which is being taken at any particular time. Certain materials, such as water, tea, coffee, and soup made entirely from meat extracts, may be taken in any quantity, but, while these act as stimulants and supply the fluid necessary for the body, they are quite without value for nutritive purposes. From all these considerations, it is evident that the diet must, to a certain extent, be carefully balanced as between the amounts of carbohydrate, protein, and fat.

As regards the balance between the

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different kinds of food that the healthy person should take, two-thirds of this by weight are usually in the form of carbohydrate (*i.e.* bread, puddings, etc.), while the remaining third should consist equally of fat and protein (*i.e.* meat, fish, etc.). On the other hand, the diabetic should take half or rather more in the form of fat, the other half being equally divided between protein and carbohydrate. He thus takes rather more than twice as much weight in the form of fat as he does in the form of carbohydrate. The general object in arranging a course of diet for a diabetic is to change gradually its proportions by increasing the fat in the first place, and then ultimately, as the patient recovers, to come back, as far as can be done without causing a reappearance of sugar in his urine, towards the larger proportion of carbohydrate which an ordinary person naturally takes.

An attempt is first made to render the urine of the diabetic patient free from sugar by dietetic restrictions on the above-mentioned lines. If, however, it is found that he cannot take a sufficient amount of suitable food without sugar appearing in the urine, he is next treated by injections of *insulin*. This is not necessary, however, in about three-quarters of all diabetic patients. The insulin is injected about one hour before the principal meal or meals of the day and it is important that this meal should contain a fair amount of carbohydrate. The dose of insulin may vary from 5 to 20 units, and it may require to be administered from one to three times in the day before meals. If an excessive dose of insulin is taken, sweating, trembling, breathlessness, and more dangerous symptoms may appear. These quickly subside when a few spoonfuls of orange juice or of sugar in water are taken. Frequently, after a patient has taken insulin for some time, the dose may gradually be diminished,

DIARRHŒA

and ultimately the remedy may be discontinued altogether.

DIACETYLMORPHINE is another name for heroin.

DIAGNOSIS is the art of distinguishing one disease from another, and is essential to scientific and successful treatment.

DIAPHORESIS is another name for perspiration. (*See PERSPIRATION.*)

DIAPHORETICS are remedies which promote perspiration.

Many means can be used to induce perspiration, among the best known being baths, either in the form of hot-vapour or hot-water baths, or the exposure of the body to a dry and hot atmosphere or to beams of electric light in a special apparatus. (*See BATHS.*) Such measures, particularly if followed by the drinking of hot liquids and the wrapping of the body in warm clothing, seldom fail to excite copious perspiration. Examples of diaphoretic remedies are Mindererus spirit, sweet spirit of nitre, Dover's powder, alcohol, and pilocarpine.

DIAPHRAGM is the muscular partition which separates the cavity of the abdomen from that of the chest.

DIARRHŒA, or looseness of the bowels, is, except in its mildest forms, a most serious condition. It is really a symptom of some disease situated in the bowels, but deserves special mention because of its serious import.

Varieties and causes.—Diarrhœa forms the chief symptom of several *serious diseases*, but it would be a great mistake to imagine that, by checking the diarrhœa, the disease is of necessity successfully treated. For example, the severity of an attack of cholera or dysentery is gauged mainly by the extent to which diarrhœa is present; in typhoid fever, persons, fed upon ordinary diet, have much diarrhœa, so that this is a usual feature in early stages of this disease; in tubercular ulcera-

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tion of the intestine (consumption of the bowels) a diarrhœa is set up which speedily brings down the sufferer; and in hysteria, diarrhœa is occasionally a troublesome manifestation.

Catarrhal diarrhœa is the ordinary form, and in it the intestinal mucous membrane is in much the same condition of congestion and swelling as the nasal mucous membrane during a 'cold in the head', and secretes, in great amount, clear, viscid mucus of a similar nature. This catarrhal diarrhœa may be produced in a slight degree by indigestible food, by nervous excitement, or as the result of a chill. In a severer form, it is, not infrequently, due to the irritation set up by poisons, either of an organic nature, such as those which occasionally develop in tinned and decaying meats, or of an inorganic nature, such as salts of mercury and arsenic. Atmospheric conditions also play an important part, some persons taking an attack of diarrhœa upon a change of weather, just as others develop a catarrhal condition in the air-passages. In children again, summer diarrhœa, commencing as an epidemic in June, reaching its greatest extent in July, and falling off again during August and September, forms one of the greatest and yearly-recurring menaces to life in early years. A child runs the greatest risk from this in its second year, particularly if it be fed on artificial foods, and if the weather be very sultry.

Mucous colitis is a chronic condition, in which attacks of diarrhœa recur from time to time, accompanied by the discharge of large quantities of clear mucus, or of strings, and long, ragged pieces of hardened mucus resembling skin.

Diarrhœa may also be a symptom of ulceration of the bowels, and is then associated with the passage of *blood and mucus*, or even of shreds of membrane produced by the destruction of the inner surface of the bowels.

Treatment.—*In adults*, if the attack

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has followed the eating of some indigestible substance, a dose of castor oil (two tablespoonfuls) or of calomel (4 grains) may be given, together with, or followed in an hour or two by, 20 drops of laudanum. If, after this has acted, the diarrhœa lasts more than a couple of days, an enema consisting of starch cream (4 ounces) with laudanum (20 drops) is very useful, given every six hours. It may be supplemented by aromatic chalk powder or carbonate of bismuth in 30-grain doses by the mouth taken three or four times daily. The diet must be bland and unirritating milk alone, or milk with a little arrowroot or corn-flour, in most cases being most suitable. To the milk may be added two or three tablespoonfuls of limewater for every tumblerful; or isinglass, one teaspoonful to a pint of warmed milk; or the milk may be peptonised with advantage. (*See PEPTONISED FOODS.*) In some cases, however, milk is found irritating, especially when the stools are acid, with a sour but not very offensive smell. In these cases barley-water, the white of an egg stirred up in water, or meat juice in water, is most suitable. In any case, fluid food should be given every two or every three hours, and only about 6 ounces at a time. After the severer symptoms of diarrhœa have passed off the affected person must exercise great caution for several days in respect to diet. A gradual return should be made to ordinary food, consisting at first of eggs, milk, and milk puddings, followed later by fish, and only after the lapse of several days by meat and vegetables. Protection of the abdomen by a special binder or cholera belt for some time is advisable.

In children, under similar conditions, a dose of castor oil, varying, according to age, from a teaspoonful to a dessertspoonful, may be tried at first. No opium preparation should, as a rule, be given to children, who are powerfully affected by this drug,

DIASTASE

but, if diarrhœa be excessive, Dover's powder may be given to the extent of 1 grain for every year of the child's age. In violent diarrhœa also, cold-water cloths or mustard leaves to the abdomen give great relief from pain. As to diet, the nature of this should be similar to that for adults. Grey powder may be given in half-grain doses to a young child several times in a day. Irrigation of the bowel with warm normal saline solution through a soft india-rubber tube is often practised, with most beneficial results. If the child become very collapsed, or if it be receiving no food, whisky may be given every few hours to the extent of 20 drops in a teaspoonful of water. In cases of threatened collapse the child is often transfused with normal saline solution into the subcutaneous tissues.

CHRONIC DIARRHŒA requires, above all things, complete rest in bed and a simple diet, such as peptonised milk, or white of egg in water, or tea and toast. Washing out of the lower bowel through a soft rubber tube, and the injection of various soothing and astringent fluids, is of great benefit. Among the few useful drugs are carbonate of bismuth in large doses of a teaspoonful, and salicylate of bismuth in smaller doses. Kaolin in doses of 1 teaspoonful or more in water after meals has sometimes a very beneficial effect. In many cases, particularly in nervous forms, tonics may do much good. If the diarrhœa is tubercular, appropriate general treatment must be adopted.

DIASTASE is the name of a ferment found in germinating seeds, and is contained in large quantity in malt. It has the property of converting starch into sugar.

DIATHERMY is a process by which electric currents can be passed into the deeper parts of the body so as to produce internal warmth and relieve pain; or, by using powerful currents, to destroy tumors and diseased parts bloodlessly.

DIET

DIET is a subject of the greatest importance. Information as to the changes in diet necessary in special diseases will be found under the head of these diseases, and what will be said here refers to general principles of feeding. Details regarding the diet of babies are given under **INFANT-FEEDING**.

Quantity of food.—The total daily amount of food necessary for a fair-sized man, doing average hard work, must provide about 3000 calories of energy, and since about 4 ounces of the daily food must be protein (meat, fish, etc.), to supply wear and tear, this leaves 2500 calories to be supplied by carbohydrate (bread, puddings, sugar, etc.) and fat together. The proportion of these to one another depends upon minor considerations; for example, the Esquimaux make it up in fat, because, in the northern regions, sugar and cereals are unobtainable. The natives of India, and the poorer classes of the world in general, use cereal food because of its great cheapness as compared with fat, and persons of feeble digestive power consume large quantities of soft fats, because—fat being, bulk for bulk, more than double the energy value of carbohydrate—the digestion of a sufficiency of food is rendered easier by the use of the former in excess. In general it is found that the fat should be about one-tenth of the carbohydrate part of the diet. The ideal then is probably about—protein, 4 ounces; fat, 2 ounces; carbohydrate, 16 ounces.

Quality of food.—After the energising power of a substance has been ascertained, there remain several other factors which determine its suitability as a food. *Digestibility* is one of the most important, for, while petroleum, sawdust, and the like have a high energy-producing power, they are absolutely useless as foods. *Absorbability* is also of importance, for few substances are completely absorbed into the system, and

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some, like vegetable proteins and white of egg, are even rejected if taken as food in large amounts, and passed by the bowels unchanged. Thus a considerable amount of all food eaten, and especially of the coarser kinds, remains unused. *Satisfying power* is of great importance, and depends partly upon the bulk of the food and partly upon its preparation. Food should not be capable of too rapid digestion, or it cannot be fully utilised by the tissues; hence a food like oatmeal is more sustaining, in persons of good digestive power, than meat essences; and hence also the value of cooking certain foods with fat, which, when it penetrates the other food, retards digestion. As a rule, the more satisfying a food is, the less digestible it proves; and this is one of the chief reasons that different foods and different methods of cooking suit persons of diverse physique and digestive powers. *Preparation* by grinding, cooking, etc., is also important. The effect of cooking is partly to develop flavours in the food, and so make it more palatable and digestible; partly to kill organisms and animal parasites which may be present in it; and, mainly in the case of meats, to soften the connective tissues which bind the meat proper, and, in the case of vegetables, to burst or tear the fibres and capsules which surround the starchy and sugary material. *Cheapness* is of immense importance to the working classes. Animal protein, as beef, forms the cheapest food, and bread is by far the cheapest, well deserving the name of 'the staff of life'. Among the cheapest and most efficient forms of protein-producing food, after bread, come skimmed milk, cheese, and fish. Fat has double the energy-producing power of carbohydrates, but butter is more than four times as expensive as its equivalent in bread. Hence fatty foods are called 'rich foods'. Nevertheless margarine (vegetable fat) falls into the list of cheap foods, and is

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quite as nutritious as the dearer butter, though, from lack of vitamin, it is less suitable for growing children.

The source of food is not indifferent. It might be thought that a person well fed on peas would have the same powers as one fed on their equivalent in beef. Considered as mere machines for doing work, men might find this quite true, but the conditions under which work can be done vary in the two cases. Those races and individuals who feed upon a largely animal diet are characterised by the power of doing work more rapidly, by greater spirit, and by greater power of resisting disease. Although, as a general principle, this is undeniably true, and although it forms the main argument against the suitability of vegetarianism for those doing severe work involving any mental or highly skilled effort, it may be carried to a very fanciful extreme, as in the case of Kean, the actor, who would choose his dinner according to the part he was to play, taking pork for a tyrant, beef for a murderer, and mutton for a lover. Probably, in such a case, ease of digestion had more to do with the effect of the food than its source.

The great objection to *vegetarianism*, on the other hand, apart from that stated above, lies in the enormous bulk of vegetable food necessary, mainly in consequence of its wateriness. Thus, if one were to subsist on nothing but lentil porridge, about 5 pounds of it would be necessary daily; or if one lived solely on green vegetables and succulent fruits, the impossible weight of 30 pounds every day would be necessary to a fairly hard-working healthy man. Those vegetarians who add milk, eggs, and cheese to their food reach at once a healthy and rational diet, and one which, in those liable to gout, rheumatism, and similar conditions, is often more salutary than a full ordinary diet. In illustration of the sufficiency and cheapness of such a simple diet, the following compara-

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tive table of two lunches, supplying about equal amounts of building and energising material, is taken from a pamphlet on 'Milk as Food' issued by the U.S. Department of Agriculture, the prices being revised for the present time :

LUNCH OF SKIM-MILK AND BREAD

Ingredients.	Amount.	Cost.	Fuel Value in Calories.
Bread .	10 oz.	1½d.	755
Skim-milk .	1 pint	1½d.	170
Totals .	..	3d.	925

RESTAURANT LUNCH

Ingredients.	Amount.	Cost.	Fuel Value in Calories.
Soup . .	8 oz.	..	75
Beef . .	2 "	..	275
Potatoes .	2 "	..	100
Turnips .	1 "	..	15
Bread . .	4 "	..	300
Butter . .	½ "	..	100
Coffee—			
Milk . .	1 "	..	20
Sugar . .	½ "	..	55
Totals .	..	2s.	940

DIET

External conditions produce great differences in the need for food. In cold climates, or in those persons unusually exposed to the weather, a special addition of fats or carbohydrates must be made to the diet in order to maintain the body heat. For the same reason a tall, spare man requires a much greater supply of these foods than a short, fat man of the same weight. Such a difference in configuration may mean the necessity for adding one quarter or more of the amount of food.

Age and sex are important considerations. A woman requires about four-fifths of the diet of a man about the same size and build, the reduction affecting chiefly the starchy and sugary elements of her food. Children require much more protein—i.e. building material—in proportion to their size than adults; while old people, on the other hand, if they wish to keep healthy, must be very sparing eaters, particularly of animal foods.

Articles of diet.—Further details, regarding the various articles in

TYPICAL HOSPITAL DIET SHEET

Full or Ordinary Diet.	Convalescent Diet.	Beef-tea Diet.	Milk Diet.
<i>Breakfast</i> Coffee or tea. Butter, ½ oz.; bread, 6 oz.; with porridge and ½ pint milk, if desired.	<i>Breakfast</i> As ordinary.	<i>Breakfast</i> Tea. Bread, 4 oz. Butter, ½ oz.	<i>Breakfast</i> Milk, 1 pint. Bread, 4 oz.
<i>Lunch</i> Milk, ½ pint, and bread, 1 slice.	<i>Lunch</i> Milk, ½ pint, and bread, 1 slice.	<i>Lunch</i> Milk, ½ pint, and bread, 1 slice.	<i>Lunch</i> Milk, ½ pint, and bread, 1 slice.
<i>Dinner</i> Meat (boiled or roast), 8 oz. Vegetables, 12 oz. Bread, 4 oz. Soup. (Farinaceous or suet pudding once a week in lieu of soup.)	<i>Dinner</i> Fish, 8 oz.; or chicken, 6 oz. (roast, boiled, or steamed); or minced collops, 6 oz.; or mutton cutlets or tripe, if desired. Vegetables, 8 oz. Bread, 4 oz. Soup.	<i>Dinner</i> Beef-tea, or chicken broth. Farinaceous pudding. (Custard occasionally.) Bread, 6 oz.	<i>Dinner</i> Farinaceous pudding. Milk, ½ pint. Bread, 6 oz.
<i>Tea</i> Tea. Bread, 6 oz. Butter, ½ oz.	<i>Tea</i> As ordinary.	<i>Tea</i> As breakfast.	<i>Tea</i> As breakfast; sago, or arrowroot, 1 oz. in addition, if desired.

DIGESTION

common use as foods, are given under BREAD, CANNED FOODS, FARINACEOUS FOODS, FRUIT, MEAT, MILK. The articles which may most suitably be taken in various diseased conditions are mentioned under the headings of the various diseases.

A prison diet which though monotonous affords ample material for hard labour is :

Breakfast.—Porridge (8 oz. meal), milk ($\frac{3}{4}$ pint).

Dinner.—Broth (1 pint), beef (7 oz.), potato (1 lb.), bread (6 oz.).

Supper.—Coffee (1 pint), bread (12 oz.).

The ordinary *standard ration* in the British navy is as follows :

1 lb. bread, $\frac{1}{2}$ lb. fresh meat, 1 lb. fresh vegetables, $\frac{1}{8}$ pint spirit, 4 oz. sugar, $\frac{1}{2}$ oz. tea, $\frac{1}{2}$ oz. chocolate, $\frac{3}{4}$ oz. condensed milk, 1 oz. jam, 4 oz. preserved meat twice weekly.

Invalid diet.—*Illness* requires considerable change of diet, usually by way of diminution. In any feverish state, when the person is confined to bed, not more than half the diet of health, and of this very little as protein, must be taken. The table on the preceding page gives a typical diet sheet for a large hospital.

DIGESTION, ABSORPTION, and ASSIMILATION are the three processes by which food is incorporated in the living body. In digestion, the food is softened and converted into a form which is soluble in the watery fluids of the body, or, in the case of fat, into very minute globules. In absorption, the substances formed are taken up from the bowels and carried throughout the body by the blood. In assimilation, these substances, deposited from the blood, are united with the various tissues for their growth and repair, and become endowed with the property of life. For the maintenance of health each of these must proceed in a regular manner.

For indigestion see **DYSPEPSIA**.

DIGITALIS is the leaf of the wild

DIPHThERIA

foxglove, gathered when the flowers are at a certain stage, dried, and powdered. The leaf contains several active principles, which can be extracted in various ways. Its action is to strengthen involuntary muscular contraction, particularly that of the muscle fibres in the heart. It is one of the most valuable remedies we have in cases of disease of the heart, associated with rapid or irregular beating of this organ, and with dropsy.

Digitalis is given as a powder, as tincture, as infusion, and also in the form of sugar-coated 'granules', which contain the active principle of the drug. The most common form of administration is the tincture, of which 5 to 15 drops, or more in special circumstances, are given. When digitalis is taken in too large doses, or over too long a period, sickness and vomiting followed by unusual slowness, and later by feebleness and rapidity of the pulse, come on. In these circumstances the digitalis should be discontinued. If a single excessive dose has been taken by mistake, an emetic should be given or the stomach washed out.

DILL is a seed-like fruit, containing a large amount of volatile oil. (See OILS.)

DILUENTS are watery fluids of an unirritating nature, which are given to increase the amount of perspiration or of urine, and carry solids with them from the system. Examples are water, milk, barley-water, and solutions of alkaline salts.

DIPHThERIA is the term applied to an acute infectious disease, which is accompanied by a membranous exudation on a mucous surface, generally on the tonsils and back of the throat.

The malady is essentially a local one in the throat due to the development there of the special germs of the disease, and the general symptoms are referable to the absorption of poisonous substances formed by these organisms.

DIPHTHERIA

There is no doubt that the disease is generally conveyed by direct contagion. The emanations from foul drains seem to have a special tendency to bring on diphtheria, either because the bacillus flourishes in such localities, or possibly because these emanations produce various kinds of sore throat, and predispose persons to diphtheritic infection.

Children appear to be more liable to diphtheria than adults; and although the most robust people may be attacked, those whose health is weakened by any cause are specially predisposed. Especially is this the case with regard to scarlet fever, and it is no uncommon thing for a person convalescing from the latter disease to be attacked by diphtheria. A method known as '*Schick's test*' has recently been devised for estimating the liability of children to diphtheria, and is used to a considerable extent in the case of schools and other institutions where children are collected together.

Symptoms.—In doubtful cases, the deciding point is generally accepted to be the following. A swab of cotton-wool mounted on a wire is rubbed against the throat, and then sent to a skilled bacteriologist for examination. A culture of the organisms from the swab is made upon dried serum, for 16 to 24 hours at the body temperature, and if the organisms found in the resulting culture be pronounced to be diphtheria bacilli, the case can be safely diagnosed as one in which this disease is present.

In general, following an incubation period of about two days after infection, symptoms set in like those commonly accompanying a cold, viz. chilliness and depression. Sometimes very severe disturbances usher in an attack, such as vomiting and diarrhoea. A slight feeling of uneasiness in the throat is experienced along with some stiffness of the back of the neck. When looked at, the throat appears reddened and somewhat swollen, particularly in the neigh-

DIPHTHERIA

bourhood of the tonsils and the soft palate, while along with this there is tenderness and swelling of the glands at the angles of the jaw. The affection of the throat spreads rapidly, and soon the characteristic exudation appears on the inflamed surface in the form of greyish-white specks or patches, increasing in extent and thickness until a yellowish-looking false membrane is formed. This deposit is firmly adherent to the mucous membrane beneath, and, if forcibly removed, it leaves a raw, bleeding, ulcerated surface, upon which it is reproduced in a short period. The appearance of the exudation has been compared to wet parchment or washed leather, and it is dense in texture.

There may be no great amount of fever, and the temperature seldom rises above 102° or 103° , but there are marked depression and loss of strength. The pulse becomes small and rapid, the face pale, the swelling of the glands in the neck increases, and albumin is found in the urine. Unless favourable symptoms appear, death takes place within three or four days, either from the rapid extension of the false membrane into the air passages, giving rise to asphyxia, or from a condition of general collapse, which is sometimes remarkably sudden. Sometimes death takes place suddenly, even when convalescence is progressing, from acute dilatation of the weakened heart, if a considerable effort be made at too early a period. Death may also ensue if the temperature rises to an excessively high degree.

In cases of recovery, the change for the better is marked by an arrest in the extension of the false membrane, the detachment and expectoration of that already formed, and the healing of the ulcerated mucous membrane beneath. Along with this, there is a general improvement in the symptoms, the power of swallowing returns, and the strength gradually

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increases, while the glandular enlargement of the neck diminishes, and the albumin disappears from the urine. These favourable symptoms should appear within three or four days, but recovery is generally slow, and it is many weeks before full convalescence is established. During this period it is particularly necessary in the case of diphtheria to guard against premature over-exertion, and for this reason patients are kept in bed for several weeks even though feeling quite well.

Various forms of paralysis often follow diphtheria. One form of paralysis affects the soft palate and throat, causing difficulty in swallowing with return of fluid through the nose, and gives a peculiar nasal character to the voice. Another form of paralysis affects the muscles of the eye, and produces loss of the power of accommodation and consequent difficulty in reading without glasses, which often lasts for a period of several months; another form may be paralysis of a limb, or of both legs, or even of one side of the body. These symptoms, however, after continuing for a variable length of time, almost always ultimately disappear.

Treatment.—The employment, in the form of spray or of washes or gargles, of solutions of peroxide of hydrogen, permanganate of potassium, listerine, boroglyceride, or chlorate of potash, sufficiently weak in watery solution to avoid irritating effect, is valuable in the way of disinfecting the parts, and subduing the fetid exhalations which are always present. Of these perhaps the favourite at the present time is peroxide of hydrogen dissolved in water.

It is, however, in great measure to the constitutional treatment that the physician's attention must be directed in diphtheria. The effect of the disease upon the patient's strength is so marked that from the very beginning there is an urgent demand for

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strong nourishment, which should be freely administered in the form of milk, soup, etc., as long as there exists the power of swallowing, and when this fails, nutrient enemata should be resorted to. The patient must be kept strictly lying in bed, for this is of great importance in preserving the strength of the heart. An operation (tracheotomy or intubation) has sometimes to be performed in order to prevent the air passages from being blocked.

Since about 1894, an antitoxic serum has come into use and has greatly improved the results of treatment in this disease.

It should be mentioned that in all cases of diphtheria, means should be taken to prevent the spread of the disease by isolation of the patient, and the use of disinfectants to purify at once all handkerchiefs, spoons, and similar articles used by him. The attendants ought to be scrupulously careful to avoid infection with the products of the disease, and should frequently use gargles. A procedure very commonly followed is to take swabs in the manner already described from the throats of all persons who have come in contact with the patient in the two or three days preceding the onset of the diphtheria. These swabs are examined for the presence of the diphtheria bacillus, and persons, in whose throat the bacillus is found to be present, are specially watched and treated by antiseptic applications to the throat.

DIPSOMANIA (see ALCOHOLISM, CHRONIC).

DISCHARGE FROM EAR, NOSE, etc. (see EAR, NOSE, etc., DISEASES OF).

DISINFECTION is the process of rendering harmless any persons, articles, rooms, etc., which are liable to communicate disease. *Disinfectants* are procedures, or substances, used for this purpose.

FORMS OF DISINFECTANT.—**Light and fresh air** are too apt to be neglected. There can hardly be found

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a more powerful disinfectant than direct sunlight, for few bacteria can survive exposure to it in the open air for an hour.

Heat is of great importance. Exposure to moist heat at 212° Fahr. or 100° C. (*i.e.* boiling in water) kills bacteria in five to ten minutes.

Among **gaseous disinfectants** are sulphurous acid, which is produced by burning a mixture of sulphur and charcoal; formalin, which is either vaporised by the heat of a lamp or used in the form of a spray; and chlorine, which is given off when chlorinated lime is mixed with an acid.

The **fluid disinfectants** include perchloride of mercury (1 in 1000 or weaker); carbolic acid (1 in 20); cresol (1 in 40 to 1 in 200); and a number of proprietary disinfectants such as Burnett's solution, containing chloride of zinc; Condy's fluid, containing permanganate of sodium; Sanitas, containing oxidised turpentine; and Izal, Lysol, Cyllin, Monsol and other coal-tar derivatives.

METHODS OF DISINFECTION.

—**The body** requires disinfection after certain acute diseases, for example after scarlatina, and parts, such as the hands and mouth, after exposure to infection. Disinfectant soaps, such as carbolic, etc., may be used, but are not of great power. A disinfecting bath of potassium permanganate solution diluted to a pale pink colour is useful, or the body may preferably, when there is a rash or peeling going on after scarlatina, be anointed with pure eucalyptus oil. For the hands, the best and most efficient disinfectant is washing in a large amount of warm water with clean soap. The hands may then be steeped for five minutes in perchloride of mercury solution (1 in 2000), or pink potassium permanganate solution. For a mouth disinfectant, washing with the last-named is perhaps best, though rather

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irritating. For this purpose peroxide of hydrogen is much used in full strength as a mouth wash, gargle, etc.

Rooms have to be disinfected, after an infectious case has been treated, and certain precautions should be observed during the illness. The room should not be swept during the course of treatment nor till after disinfection, but furniture may be dusted with a damp cloth. A sheet damped with 1 in 20 carbolic acid solution may be hung outside the door of the sick-room for isolation, and may be redamped with the same solution as it becomes dry. During the disease, all unnecessary ornaments, hangings, and the like should be removed. At the end, the carpet, if not previously removed, should be rolled up, any bright metal fittings removed or smeared with vaseline for protection, and then the room should be fumigated with sulphurous acid gas, or sprayed with formalin, to disinfect the atmosphere and walls. Next, the bedding, carpets, window curtains and similar objects, which require a more than superficial disinfection, should be removed for disinfection by heat. Thereafter the floor should be immediately mopped with cresol solution or perchloride of mercury, to destroy any organisms which may have fallen on it, and finally the windows widely opened to allow the fresh air and sunlight free access for twenty-four hours.

Clothes and bedding require careful handling, since mattresses and the like are damaged by moisture. All rags, cheap books, toys, and valueless clothing should simply be burned. Washable articles like sheets, cotton, and flannel garments should be steeped, before removal from the sick-room, in cold water containing 2 per cent lysol or similar substance, to remove excreta, discharges, etc., and then boiled for ten minutes before being sent to the laundry. Bedding, carpets, curtains, dresses, and outer garments may be sterilised by moist or dry heat. Usually the sanitary

DISLOCATIONS

authorities of towns will do this, free of charge, on application. Valuable books may be sterilised by formalin vapour.

Stools, sputum, and other discharges may be removed from sheets and clothing as above. All stools, sputa, etc., from infectious cases should be mixed at once with an equal bulk of strong cresol solution (1 in 50), lysol solution (1 in 20), or disinfected with other antiseptic, such as perchloride of mercury, chloride of lime, etc., before being emptied down the drains.

Drains and streets should be kept in good repair and occasionally flushed. During an epidemic outdoor courts and passages may be irrigated with water containing one pound of chlorinated lime per gallon, and, after a few hours' interval, thoroughly flushed. Burnett's solution is also largely used for disinfecting bilgewater, cesspools, etc., and for pavements cresol has been recommended as several times stronger than carbolic acid.

DISLOCATIONS are injuries to joints of such a nature that the ends of the opposed bones are forced more or less out of connection with one another. Besides displacement of the bones, there is more or less bruising of the tissues around them, and tearing of the ligaments which bind the bones together.

Treatment.—So far as temporary treatment is concerned, nothing is necessary but a splint, bandage, sling, or the like, to keep the injured part moderately quiet, because there is not the same danger of damage to nerves, vessels, etc., by the rounded head of the bone, as by the sharp fragments of a fracture. The greatest care is necessary in reduction, *i.e.* putting the dislocated bone back in place, for great damage may be done by an unskilled person in the way of breaking the bone, tearing nerves and vessels, or even leaving the bone dislocated in a new direction. After reduction to the natural position, the

DISSEMINATED SCLEROSIS

limb must be fixed for a time so as to prevent a recurrence, which will take place if it be used at once. The length of time depends upon the severity of the injury; as a rule, after about ten days, gentle movements are made to prevent the joint becoming stiff, and the bandages, etc., left off after about three weeks. But care in using the limb is necessary for long.

DISSEMINATED SCLEROSIS, also called **MULTIPLE** and **INSULAR SCLEROSIS**, is a disease of the brain and spinal cord, which, though slow in its onset, produces marked symptoms, such as paralysis and tremors, and renders persons suffering from it confirmed invalids in the course of a few years. It consists of hardened patches, from the size of a pin-head to that of a pea or larger, scattered here and there irregularly through the brain and cord.

Symptoms.—These depend greatly upon the part of the brain and cord affected by the sclerotic patches. Very often the disease is preceded by some 'hysterical' manifestations, and may show no other sign for several years. Temporary paralysis of a limb, or of an eye muscle, causing double vision, and tremors upon exertion, first in the affected parts, and later in all parts of the body, are early symptoms. Tremor of the eye movements (nystagmus) is usually found. Trembling handwriting, interference with the functions of the bladder, giddiness, a peculiar 'staccato' or 'scanning' speech, and various peculiarities of sensation—*e.g.* numbness, prickly feelings, hot flushes—are common symptoms at a later stage. As the disease progresses, these become marked, epileptiform fits may appear, mental dullness, or more serious insanity sometimes comes on, and the paralyses, which were before transitory, now become confirmed, often with great rigidity in the limbs. The disease often, however, takes many years to reach full development.

DISTEMPER

Treatment is unsatisfactory, because the most that can be done is, by means of careful dieting, tonics, plenty of sleep, and especially by leading a life as free from strain as possible, to check the progress rather than to effect a cure of the disease.

DISTEMPER is the name applied to several infectious diseases of animals, especially a contagious catarrhal disease affecting young dogs. It is not communicable to man.

DIURETICS are substances which produce diuresis, that is, which cause a copious excretion of urine by the kidneys.

Unirritating watery fluids — *e.g.* milk, lemonade—are rapidly excreted. Substances which dilate the kidney arteries, as alcohol, spirit of nitrous ether, and salts of the alkalies, especially potassium salts, which disturb the composition of the blood and are accordingly quickly discharged from the body, have a diuretic action. Substances which irritate the kidneys act in small amount as stimulants to their function; for example, oil of turpentine, oil of juniper, cantharides, caffeine, diuretin. Substances which increase the force of the heart, and consequently the pressure of the blood, act under certain conditions in this way also; for example, digitalis, squills, infusion of broom-tops.

DIURETIN is the salicylate of theobromine and soda, and, being a powerful diuretic, is much used for the treatment of dropsy due to kidney insufficiency.

DIZZINESS (*see* GIDDINESS).

DOSAGE.—The quantity of medicine given in one dose must vary considerably in different circumstances. Many drugs produce one effect when given in small amount, and quite another effect when administered in larger quantity; thus tartarated antimony in small fractions of a grain causes merely profuse perspiration, while one or two grains will act as an emetic; or, again, ipecacuanha wine

DOSAGE

in small doses is an expectorant, while in larger quantity it is emetic.

Many factors, however, influence the activity with which drugs of very definite effect operate; and instead of having a fixed dose each drug varies in the amount given, according to circumstances, within certain recognised limits. Among the factors which affect the necessary quantity are age, weight, sex, idiosyncrasy, habitual use, disease, fasting, combination with other drugs, and the form in which the drug is given.

Age is perhaps the most important factor of all, for naturally a young child requires a smaller dose than an adult. One method of finding out the dose suitable for a child is to divide the child's age at next birthday by the number 24; the resulting fraction gives the portion of the adult dose required.

Very few drugs are suitable for administration to infants before the age of one year; some should be avoided all through childhood.

Weight and Sex are of importance, for, as a rule, women require slightly smaller doses than men, while naturally an individual weighing 100 pounds would require much less than a person of double that size.

Idiosyncrasy occasionally causes drugs administered in the ordinary dose to produce unexpected effects. Thus some people are but little affected by even powerful drugs, while in others certain drugs, such as iodide of potassium, calomel, or belladonna, produce excessive symptoms in minute doses. Similar facts are noticed in persons of one family or race.

Habitual use of a drug is perhaps the influence that causes the greatest increase in the dose necessary to produce its effect. The most notable examples are found in the large quantities of opium and arsenic that can be tolerated by habitués of these drugs.

Disease modifies very greatly the dose of many medicines, for their tendency to produce poisonous effects

DOUCHE

diminishes in circumstances that urgently require their administration.

DOUCHE is an application of water to the body, directly, through a pipe.

Douches fall into two divisions: (a) those which act by virtue of some substance which they contain, such as astringent douches, cleansing douches, etc.; (b) those which act by virtue of their temperature, producing the effects which have been described under **BATHS**, with the distinction that douches produce an action upon one part only.

Uses.—(a) **MEDICATED AND CLEANSING DOUCHES** are applied when it is inconvenient to use a general bath. For example, *warm douches* of boric lotion may be used to irrigate wounds or ulcers, either in order to remove dressings which are adherent, or in order to maintain a steady trickle over the broken surface, and prevent accumulation of putrefactive material.

Bladder douches are often used in inflammation of this cavity, containing, for example, boric acid solution (1 in 80), or weak potassium permanganate solution. *Vaginal douches* of sulphate of zinc (2 grains per ounce), Condy's fluid of a pink tinge, perchloride of mercury (1 in 4000), etc., are used in cases of leucorrhœa or 'whites'. Very often such a douche is used at a temperature of 115° Fahr., or as hot as the hand can bear, in order to obtain also the soothing and constricting action of a hot douche on the blood-vessels of the surrounding parts.

(b) **TEMPERATURE DOUCHES** may be hot or cold, or in general the two alternated. Douching, combined with massage, is a useful procedure for rheumatism, neuralgia, and other pains. An alternate hot water and cold water douche is used for similar purposes, and it is important that the hot stream should be given first, and that it should last four or five times as long as the cold stream. Such a douche acts powerfully upon the skin and nerves, and can be continued for a few minutes only.

DROPSY

DOVER'S POWDER, also known as **COMPOUND IPECACUANHA POWDER**, is made from 10 per cent each of powdered opium and ipecacuanha, with 80 per cent of sulphate of potassium.

It is used in many different conditions to which opium is applicable, one of its main uses being to check diarrhœa, another to increase the action of the skin, and so benefit a cold in its early stages. The dose is 5 to 15 grains.

DRASTICS are substances which have a violent purgative action, such as croton oil, jalap, scammony.

DRAUGHT, or **DRAFT**, is a small mixture intended to be taken at one dose. It consists generally of two or four tablespoonfuls of fluid. The best-known is black draft, whose chief constituents are sulphate of magnesium and tincture of senna.

DRAW SHEET (*see* **BED**).

DREAMS (*see* **SLEEP**).

DRENCH is an old term still used in parts of England for a draft of medicine.

DRESSINGS (*see* **WOUNDS**).

DROP-FOOT is a condition in which there is difficulty in raising the front part of the foot from the ground, or in which, when the condition is severe, the foot hangs limp, although the muscles of the calf are strong and pull the heel upwards. It is often due to neuritis.

While the condition lasts, it is usual for the patient to wear a shoe of which the front part is supported by an elastic band attached to the front of the leg in order to prevent the weak muscles from being overstretched.

DROPSY, or **HYDROPS**, means an accumulation of watery fluid beneath the skin, or in one or more of the cavities of the body. The term is a general one, the accumulation in special localities having special names, e.g. dropsy beneath the skin is known, when limited, as *œdema*, when widespread, as *anasarca*; dropsy in the abdomen as *ascites*, in the chest as

DROPSY

hydrothorax, and in the head as *hydrocephalus*.

Causes.—It is a mistake to regard dropsy as in itself a disease, although this is a popular idea, supported by the fact that many deaths are recorded as due to 'dropsy' without a further statement of the cause.

Heart disease, in consequence of the defective pumping action of the heart, and *Bright's disease*, in which the kidneys fail in their functions of excreting poisonous substances and a certain amount of water from the blood, are the main causes of general dropsy. In heart disease the dropsy is more marked after exertion, in kidney disease it is found chiefly after resting. Thus one of the chief characters of dropsy due to Bright's disease is that it appears in the morning, affects loose tissues like the skin beneath the eyes, and passes off as the day advances. Dropsy due to heart disease, on the other hand, tends to appear towards evening, affects dependent parts like the feet, and vanishes during the night. When the two diseases are combined, the state of dropsy may become very grave.

In *general debility* due to overwork, bloodlessness, and the like, dropsy of the feet and legs frequently appears towards evening. *Cirrhosis*, tumors, and other diseases of the liver may, by interference with the circulation through it, cause dropsy first of the abdomen and later of the lower limbs.

Treatment.—There is no general treatment which will meet every case. The particular cause has in each case to be removed. Cases due simply to ill-health pass off as the health improves under tonics, rest, and good food. Dropsy due to heart or kidney disease yields as the disease producing it is alleviated. In cases of localised dropsy, elevation of the dropsical part is of great importance, and the person should adopt the recumbent position. In the case of heart disease, digitalis, strophan-

DROWNING, RECOVERY FROM

thus, squills, and infusion of broom-tops, which improve the action of the heart, form the chief means employed. Often when the dropsy has become so great as to distend the abdomen tightly, it is necessary to begin the treatment by a purgative such as blue-pill or jalap, which relieves the distension and allows the circulation in the kidneys, impeded by the distension, to proceed. Further, the sick person must rest quietly in bed, lying preferably on one or other side. In acute kidney disease, the treatment of the dropsy consists in the hot-air baths, aperients, and drugs to act upon the skin, which form the routine treatment of Bright's disease. In dropsy due to deficient kidney action, spirit of nitrous ether, cream of tartar, caffeine, diuretin, oil of juniper (in gin), and infusion of broom-tops are effective, but must be used with caution. In dropsy due to liver conditions, occasional purges with blue-pill, or calomel, help the condition. When the dropsy will not yield to drugs, some of the fluid may have to be drawn off, and very frequently when this is done partially, the kidneys are enabled to cope with the remainder of the fluid.

DROP-WRIST is a condition in which, owing to partial or complete paralysis of the muscles which extend the hand, the latter droops at the wrist.

DROWNING, RECOVERY FROM.

—The number of deaths from drowning registered yearly in Great Britain is roughly about 2800. In drowning, death as a rule ensues from asphyxia. It must be remembered that complete deprivation of oxygen results in death after three to five minutes, and therefore recovery is unlikely if the submersion under water has lasted longer than a few minutes, though recovery may occasionally follow immersion for a much longer time. Therefore speed and immediate treatment on withdrawal from the water are of paramount importance.

DROWNING, RECOVERY FROM

The specific gravity of the body being slightly greater than that of water, it sinks at first; then if the person is able to struggle, his efforts bring him to the surface where he remains so long as he can swim, only to sink again as he becomes exhausted. This may be repeated several times, though the popular idea fixes the permanent disappearance at the third time. In these struggles, water mixed with air is drawn into the air passages, and the two are churned up with mucus into a froth which forms a great obstacle to the entrance of air into the lungs during subsequent attempts at resuscitation. The first step in this process should be commenced *on the instant the body is drawn from the water*, without delay for any examination, removal of clothing, or the like, and consists in the attempt to restore breathing by *artificial respiration*. The same methods of artificial respiration are applicable to other cases of asphyxia produced by inhalation of poisonous gases, or by mechanical obstruction, such as hanging, strangling, or choking.

Schafer's prone-posture method is carried out as follows: Immediately on removal from the water, place the patient *face downwards* on the ground, with a folded coat under the lower part of the chest, and lose no time by removing clothing. Turn the patient's face a little to one side, so that the mouth and nose are not obstructed. Let the operator kneel astride of or to one side of the patient, facing his head, and let him place his hands over the lower part of the patient's back, one on each side (on the lowest ribs). Let him throw the weight of his body forward upon his hands, so as to press the air (and water if there is any) out of the patient's lungs. Then let him immediately raise his body to take the pressure off and allow the patient's chest to expand. Repeat these movements twelve or fifteen times per minute.

This method has the advantages

DROWNING, RECOVERY FROM

of extreme simplicity and great effectiveness.

Silvester's method is fairly efficient and quite simple. Its drawbacks are, that in addition to the operator there should be someone to hold the feet of the patient—though this is not absolutely necessary—and that there may be difficulty in keeping the entrance to the larynx open. To effect the latter, the tongue must be drawn forward, and if necessary held forwards either by means of a cloth or forceps. The patient after his air passages have been cleared, is placed *face upwards* on a flat surface inclined a little from the feet upwards, with a roll of clothing under his shoulders. The mouth and nose are carefully wiped. Then to produce inspiration the operator, placing himself at the head of the patient, grasps his arms just above the elbows, and draws them upward by the side of the head for two seconds. Next, to produce expiration, he turns down the arms and presses them against the patient's chest for two seconds. This is repeated fifteen times a minute. A caution is necessary that the downward movements must not be made too forcibly; for serious damage is apt to be done to the internal organs of an unconscious person by violent pressure.

After-treatment for drowning.—As soon as the patient makes efforts at breathing, these measures are stopped. But no such effort may be made for twenty minutes, an hour, or even in some recorded cases for several hours, and still the person may recover, so that artificial respiration should be persevered with so long as there is the slightest sign of life. Efforts must next be made to restore the feeble circulation, and, in cases where the body has been long in water or much exposed during artificial respiration, to regain the body warmth. To this end the patient should be wrapped in hot blankets, with hot bottles to the

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sides and feet, and the arms and legs should be energetically rubbed upwards towards the body. So soon as the power of swallowing returns, sips of hot water, and teaspoonfuls of hot brandy and water, or hot coffee, may be administered.

DRUG (*see* DANGEROUS DRUGS and DOSAGE).

DRUG HABITS.—Drugs, which have been administered for the relief of pain, for sleeplessness, or as a temporary stimulant, or which have been taken out of curiosity, are sometimes continued for their pleasurable effects or for the temporary sense of increased well-being which they confer, until their use becomes a habit. This habit may be continued either because the habitué has not sufficient will-power to resign the pleasure derived from the use of his drug, or, very often, because any attempt to break off the habit leads to severe mental and bodily distress. All such habits lead to a mental and moral deterioration, and, under proper precautions, they may in every case be broken off.

Alcohol habit (*see* ALCOHOLISM, CHRONIC).

Ether habit.—This is by no means common, but comes into vogue now and then. Several teaspoonfuls are taken with water, and produce quickly a state of excited intoxication, which goes through all the stages of alcoholic intoxication in an hour or thereabout. The treatment is similar to that for alcoholism.

Cocaine habit.—This is generally taken hypodermically by its habitués, or swallowed in powder or taken as snuff. The drug gradually begins to lose its effect, and larger and larger doses have to be taken; while, at the same time, dyspepsia, loss of appetite, restlessness, sleeplessness, forgetfulness, and failure of the power to apply the mind to any task appear. Finally, the person may pass into a state of melancholy or mania. Marked physical deterioration in the

DRUG HABITS

form of emaciation and digestive disorders is also found. The treatment is similar to that for the morphia habit, but the cocaine habit is the harder to renounce.

Morphia habit, or opium habit, is perhaps the commonest one indulged in. The confirmed morphia-eater, who takes excessive doses or uses the drug constantly, speedily degenerates. His face becomes sallow, his appearance prematurely aged, and his muscles wasted. The memory becomes bad, sleep is lost, and conditions resembling neuralgia or ague come on, from which the only relief is given by larger doses. The character changes also, and a person, who previously was honest and truthful, becomes in everything utterly untrustworthy. Delusions of various sorts may present themselves, and under their influence criminal acts may be performed. If the drug be suddenly stopped, there is always much suffering. Restlessness and sleeplessness become extreme, neuralgic pains come on, and dyspepsia, diarrhoea, and vomiting appear.

Treatment.—The longer the habit has lasted, the less hope is there for permanent abandonment of the drug, and persons who have long lost self-control may relinquish one habit only to fall into another, like that of alcohol. There are three modes of treatment. The first consists in abandoning the drug entirely and at once, and this is the best thing for cases in which only moderate doses are taken. The morphia may be temporarily replaced by large doses of bromide of sodium. The second mode is by rapidly withdrawing the drug, beginning with one-third of the habitual dose and reducing this to none in the course of a week or ten days. These diminishing doses should be given by the mouth, and the syringe abandoned. Bromide of sodium is given in doses which increase as the morphia is diminished. This is perhaps the best method in most cases where large doses are

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taken, and should be combined with a milk diet, rhubarb and soda if there be indigestion, caffeine if a stimulant be needed, and massage or hot fomentations for the pains, if these be severe. The third method consists of slow reduction, lasting over weeks or months, and is sometimes necessary in the case of very weak people, who might collapse on a sudden removal of their drug. Tonics, change of scene, and, above all, careful watching of the patient are necessary for long after the habit is shaken off.

Chloral-hydrate, Sulphonal, Trional, Bromides, and Paraldehyde have also their devotees, the habit having been contracted through taking the drug for insomnia. Confusion of mind, digestive troubles, and inability to transact business are the symptoms, but these habits are out of comparison more easily abandoned than those of cocaine or morphia. The drug should simply be stopped once and for all, the patient resting quietly in bed for some time and being massaged to induce sleep.

DRUNKENNESS (*see* ALCOHOLISM, ACUTE, and CHRONIC).

DRY BELLY ACHE is a popular name for colic.

DUCT is the name applied to a passage leading from a gland into some hollow organ, or on to the surface of the body, by which the secretion of the gland is discharged.

DUMBNESS means an inability to pronounce the elementary sounds which make up words, and is present in the proportion of about 1 to every 1000 of population.

Varieties.—The important classification of cases of deficient power of speech is into (*a*) those associated with deafness, and (*b*) those in which hearing is good. In a case associated with deafness, the person may be dumb merely because he has been born deaf, and, having no knowledge of sound cannot understand or make intelligible sounds, although pro-

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vided with good voice mechanism; or a person who has lost his hearing by some disease in childhood may be unable to speak otherwise than as a child for the same reason. When hearing is good, on the other hand, dumbness is due generally to some mental defect or sometimes to some failure in the organs of voice production.

Treatment.—Deaf-mutes may be trained to read the lips and throat movements of others by sight, and to use their powers of voice through a complicated process, which should begin about the age of six or seven. It is hard for adults to pick this up, and persons who are to be instructed in this method should not learn the finger language first.

DUODENAL ULCER is a condition in which an ulcer similar to an ulcer of the stomach forms in the duodenum usually just beyond the exit from the stomach. The chief symptoms of duodenal ulcer are pain of a spasmodic character commencing from half an hour to three hours after food is taken and sometimes relieved by taking more food; also tenderness below the ribs slightly to the right of the middle line; and frequently the passage of dark, tarry material derived from blood, in the stools. There are also general symptoms of failing health and anæmia caused by interference with digestion and by the loss of blood in cases where this is considerable. The treatment of duodenal ulcer is similar to that of gastric ulcer. (*See* STOMACH DISEASES.)

DUODENUM is the first part of the intestine immediately beyond the stomach.

DURA MATER is the outermost and strongest of the three membranes or meninges which envelop the brain and spinal cord.

DYES, POISONOUS, sometimes cause skin eruptions. This is usually due to the presence of arsenic in the dye. (*See* ECZEMA.)

DYSENTERY, also called bloody

DYSENTERY

flux, is an infectious form of inflammation and ulceration of the lower portion of the bowels.

It is in some cases due to a bacillus, in others to the presence of an amœba, a microscopic animal parasite. The occurrence of abscess of the liver in connection with dysentery is frequently observed. It comes on sometimes a considerable time after the attack of dysentery, even when the affected person has left the tropics and returned to a temperate clime, and it occurs only in connection with the amœbic, not with the bacillary form.

Symptoms.—The matters passed from the bowels, which at first resemble those of ordinary diarrhœa, soon change their character, becoming scanty, mucous, or slimy, and subsequently mixed with, or consisting wholly of, blood, along with shreds of the mucous membrane of the intestine. The violent diarrhœa gradually abates, but there is a great tendency for the disease to become chronic.

Treatment.—A restriction of the diet to albumin-water, rice-water, or light meat broth for a day, together with rest in bed and a dose of castor oil to which laudanum may be added to relieve griping, is often sufficient to arrest a mild attack. Other remedies which alleviate the symptoms are carbonate of bismuth in large doses and astringent or soothing enemata.

In the amœbic form *ipêcacuanha* or its active principle, emetine, is much employed. In the bacillary form a serum is used.

In *chronic dysentery* the chief points to which attention should be given are the proper nourishing of the patient, and the observance of judicious hygienic measures, such as the due clothing of the body, the use of tonics, baths, etc. A method of treatment, which has often resulted in cure, consists in the administration every day or two of purgative doses of castor oil combined with laudanum in order to relieve pain. Another

DYSPEPSIA

procedure, which is almost always attended with benefit, is the daily washing out of the lower bowel with warm salt water or some mild astringent in large quantities. Still another method of treatment, which is often followed quickly by good results, is the administration of a substance which forms a soothing coating to the bowel and at the same time absorbs and carries off the bacilli in the motions. For this purpose large doses of a teaspoonful or more of carbonate of bismuth or of kaolin are administered in water after every meal.

DYSMENORRHŒA means painful menstruation. (*See MENSTRUATION.*)

DYSPEPSIA means pain, or any uncomfortable symptom associated with the function of digestion. The term dyspepsia should not be limited to the occurrence of pain while the food remains in the stomach, for (*see DIGESTION*) this period represents only a small part of the digestive process, and interference with this process, in its wider sense, may produce various symptoms, such as appendicitis, colitis, constipation, diarrhœa, upon which information will be found elsewhere.

The condition of the teeth is of the utmost importance in regard to dyspepsia, particularly those forms grouped below as Nervous Dyspepsia, and proper chewing of the food, together with leisurely eating of meals by those accustomed to hurry, frequently suffices to cure indigestion of long standing.

ACID DYSPEPSIA (**ACID GASTRITIS**) is one of the commonest forms. It is of several types, but as a rule affects young persons or those in the prime of life, and is due to the presence of an excessive amount of hydrochloric acid, or of acid salts, in the gastric juice. One type affects persons of sedentary occupation, who eat irregularly as to time and amount of food, and who are in the habit of 'bolting' their meals. Another type of sufferer is a girl the subject

DYSPEPSIA

of anæmia. Acid dyspepsia, if untreated, is apt to result in a gastric or duodenal ulcer. (*See STOMACH, DISEASES OF.*)

Symptoms.—As a rule, the dyspeptic is conscious of irregularity in taking his meals, and, having a good appetite, eats at times more food than is good for him. There is no discomfort for perhaps an hour, indeed relief is often gained by eating, and then a sense of heaviness and heat about the pit of the stomach and left side set in and grow gradually worse. There is often a feeling as of strangling in the throat, and a vague sense of constriction in the left side which grows now more and now less intense in conformity with the muscular action of the stomach. Relief is got for a few seconds by swallowing saliva, and by gulping mouthfuls of air, but these lead later only to distension and greater pain. After perhaps an hour of this discomfort, a burning feeling (heart-burn) is experienced about the centre of the chest, and mouthfuls of intensely sour material are brought up into the mouth, leaving a raw feeling in the throat. Now and then vomiting occurs, and this gives temporary relief.

Treatment.—Regularity in meal-times, and in the amount of food taken at each meal, are essential, and regular exercise in the open air, cold baths in the morning, and early rising all play an important part. The food should be chewed deliberately, and small meals, frequently taken, suit this and the following form of dyspepsia better than large meals with long intervals. It is important to avoid condiments, such as vinegar, mustard, pickles, and particularly salt. The food should be of a simple form, which does not stimulate the walls of the stomach to secrete much gastric juice, such as eggs, fish, thick soups, puddings made from tapioca, cornflour, rice, and the like. Above all, milk and cream are well borne, and, in any case where there is bleed-

DYSPEPSIA

ing, should form the staple of the diet. Meat, meat essences, and strong (stock) soups should be avoided. The symptoms may be much abated by powders containing rhubarb (2 grains), soda (6 grains), and carbonate of bismuth (20 grains), taken half an hour after meals, or by a soothing mixture before meals.

CHRONIC CATARRH OF THE STOMACH (*MUCOUS GASTRITIS*) may come on as a late stage of the above. One of its commonest causes is the chronic abuse of alcohol.

Symptoms.—The appetite is poor, or is capricious with an inclination for sharp, sour, or salt articles of diet like pickles, pepper, vinegar, salt herrings. The tongue is covered with a thick yellow or brownish fur, especially in the mornings, and, in consequence, the taste of ordinary food is dull and papery. The usual symptoms are discomfort, eructations, and choking sensations after a meal, with occasional vomiting, particularly in the morning.

Treatment.—Attention to the diet is here also the most important point. Alcohol and tobacco, which maintain and even cause the condition, must be stopped, and daily exercise should be taken. Salted foods, pickles, and the like may in this case be taken, and are beneficial when a meal contains a considerable amount of meat, because the secretion of gastric juice is feeble and is stimulated by these means. The meat taken should all be scraped down, because the gastric juice has to a large extent lost its power to dissolve it.

Appetite may be gained by taking bitters half an hour before dinner, such as gentian or calumba with nuxvomica. Before breakfast, the patient may take a tumblerful of warm water, to which has been added a small teaspoonful of common salt, or some effervescent saline aperient. This has the effect of dissolving the mucus on the stomach and also of helping the action of the bowels.

DYSPEPSIA

NERVOUS DYSPEPSIA includes many forms, the cases being due, not to an actual organic deficiency in or injury to the stomach, but to an exaggerated influence of the nervous system in increasing or diminishing the natural movements of the digestive organs, or altering the character of their secretions. There may be no apparent cause for the dyspepsia beyond the fact that the person is of a nervous temperament, or there may be trouble in other organs, and particularly in women in the womb or ovaries, or the nervous system may be temporarily excited or worn out. These forms of dyspepsia occur also in alcoholics, in great brain-workers, and in people subject to constant exhaustion, and are very liable to be associated with mental depression and the moody critical state known as 'hypochondriasis'.

Treatment.—Spasm is relieved by hot compresses, mustard leaves to the pit of the stomach, and internally antipyrine (5 grains), peppermint water (a tablespoonful), or tincture of valerian (20 drops on sugar). Flatulence requires simple food, an avoidance of certain articles of diet, such as green vegetables, and general tonic treatment. (*See FLATULENCE.*) It is important to bear in mind that flatulence is often due to a habit of swallowing air, and its discomfort is relieved by breaking this habit.

FERMENTATIVE DYSPEPSIA is a condition which arises in connection with dilatation of the stomach due to some obstruction at its exit, or to a 'dropped' position of the stomach. In consequence of this, food is retained, ferments, and distends the organ. In the majority of cases the gastric juice is not deficient.

DYSPNŒA

Symptoms.—Great loss of appetite, a feeling of constant fullness and weight increased by food, belching up of foul-smelling gases, repeated vomiting of large quantities of fermenting, frothy, and half-digested food, great thirst, headache, and obstinate constipation are the main symptoms of this form of dyspepsia.

Treatment.—The washing out of the stomach, regularly, for a period of some weeks, either at night or in the morning, is the special treatment of this condition. After having been shown a few times how to pass the stomach tube, the patient can easily do this for himself, and thereby obtain great relief.

Further, a special diet is necessary. The dyspeptic should avoid fats and starchy foods, take all his nourishment in as dry a form as possible, eat only three meals daily, with no food between them, and limit the fluid he drinks to a quart or less each day. Lying upon the right side for half an hour some 2 or 3 hours after a meal enables the stomach to empty itself and so brings relief. The wearing of a supporting belt also helps to counteract the dilatation. When the condition of dilatation is great and does not yield to simple treatment, the operation of gastroenterostomy—by which an opening is made out of the lowest part of the stomach into a neighbouring loop of the small intestine—is sometimes helpful in cases of dilatation caused by narrowing of the scar following an ulcer.

DYSPITUITARISM means disordered function of the pituitary body. (*See PITUITARY BODY.*)

DYSPNŒA means difficulty in breathing.

E

EAR.—The ear is concerned with two functions. The more evident is that of the sense of hearing, the other, with which the ear has more or less to do, is the sense of balance and of motion. The organ is divided into three parts: (a) the external ear, consisting of the auricle on the surface of the head, and the tube which leads inwards to the drum; (b) the middle ear, or 'drum', separated from the former by the tympanic membrane, and from the internal ear by two other membranes, but communicating with the throat by the Eustachian tube; and (c) the internal ear, comprising the complicated labyrinth from which runs the auditory nerve into the brain.

EAR, DISEASES OF.—Troubles connected with the ear should, when possible, be early treated, both on account of this organ's importance, and because, owing to its delicacy and inaccessibility, little can be done for unpleasant symptoms like deafness and ringing due to advanced disease.

General symptoms.—The following are some of the chief symptoms of ear disease:

DEAFNESS (*see* DEAFNESS).

EARACHE is in general due to acute inflammation in the middle ear, but may also be due to chronic inflammation, or to boils, eczema, wax, or neuralgia affecting the outer ear. Pain in this region may also be caused by carious teeth. The treatment varies, of course, with the cause, but the pain may generally be relieved to some extent by applying hot flannel or a hot-water bag to the side of the head. Ear drops consisting of carbolic acid (10 grains) in glycerin (2 drams) have a soothing and antiseptic effect when one or two drops are instilled into the ear. A few drops of *landanum* have a similar effect when dropped from a warm teaspoon. Warm salt solution (a teaspoonful to

every tumblerful of water) may also be gently run into the ear for two hours with soothing effect.

RINGING in the ear, or 'tinnitus', is sometimes a very annoying symptom. It may take various forms, but is in general accompanied by catarrh of some part of the ear. Clicking similar to the noise made by winding up a watch, and caused by spasm of small muscles about the throat and ear, is relieved by general tonic treatment. Blowing, hissing, and whistling noises, like those made by an escape of steam, or by a boiling kettle, are the most common and most annoying forms. Usually they are associated with middle-ear catarrh, but they are very often due to gout or rheumatism or associated with high blood-pressure and diminish as the general disease is treated. Accompanied by deafness, ringing is not infrequently due to wax. Bromide of potassium or dilute hydrobromic acid is the drug which is most often successful by internal administration. Musical tinnitus sometimes occurs, in which the sound of bells, or of short passages of music, is repeated constantly. It is due to similar causes.

DISCHARGE from the ear may arise in the external ear as the result of eczema, boils, or the irritation caused by a plug of wax or foreign body, but, in the absence of these, comes in the great majority of cases from a chronic suppuration in the middle ear through a perforation in the drum. The suppuration may begin in an acute inflammation of the middle ear arising in the course of a 'cold in the head', or may result from scarlet fever, or measles, or may be due to disease of the bone in or around the ear, or may simply have a slow onset, without apparent cause, in weakly persons, especially in children. The discharge may be thick and yellowish, in cases which are fairly acute, or thin and watery in cases which are improving, or brownish and evil-smelling in cases

EAR, DISEASES OF

which have been neglected, or in which the bone is diseased. There are two common fallacies regarding this condition. One is that a discharge from the ear is a trifling thing, and that, on the whole, it is undesirable to take means to cure it. In reality the presence of suppuration is accompanied usually by increasing deafness, and is attended always by the risk of an abscess in the mastoid antrum, or even within the skull. The other fallacy is that a perforation in the drum necessarily entails great deafness. As a matter of fact, unless the perforation be so large as to interfere with the tension of the drum, it causes little interference with hearing, the real cause of deafness in suppurative middle-ear disease being adhesions which bind down the small bones and prevent their movements. In the treatment of a case of suppuration, the most important point is to keep the outer ear clean by syringing, which is done, as a rule, with boracic acid solution. For the reduction of the discharge, three methods are in vogue, according to the circumstances of the case: (1) the use of drops is carried out by dropping into and holding in the ear for fifteen to twenty minutes some astringent and antiseptic fluid, such as a mixture of hydrogen peroxide and rectified spirit in equal parts. This is repeated every day or every few days, and is most successful in cases where the discharge is thin and small in amount. (2) The dry method is performed by syringing, and then carefully mopping out the outer ear with a piece of wool. Next, powdered boracic acid is blown in by a quill, and gently pressed down under cotton-wool. This is repeated next day or after a few days, so soon in fact as the discharge has soaked through the powder. (3) The absorbent method is simplest, and is most easily borne by a tender ear. It consists, as in the others, in cleansing the ear by syringing and then gently pushing in a wick-shaped strip

EAR, DISEASES OF

of gauze. The latter must be changed two or three times each day. If these methods fail, it may be necessary for a surgeon, in bad cases, to remove the small bones and remains of the drum, and so to convert the middle ear into a simple cavity, which can be easily kept clean.

WAX in the ear is the commonest cause of deafness, sometimes even of several years' standing. It is to be removed by syringing with warm water containing two teaspoonfuls of baking soda to a tumblerful of water, or a weak solution of lysol. If the wax be very hard it should be softened by making the person lie down on his side for half an hour with the affected ear upwards, into which is poured some of this solution, or a few drops of sweet oil. At the end of half an hour the syringing is repeated.

Syringing is done with a large-sized glass or metal syringe provided with a short point (not longer than 1 inch, so that no damage to the drum can result). The auricle is pulled gently up and back while a steady stream from the syringe is directed along the upper wall, and flows out along the lower one. In syringing the ear of a child, the point of the syringe should not be inserted within the shallow passage at all.

FOREIGN BODIES, such as peas, gravel, or slate-pencils are often pushed by children into the ear, and are extremely difficult to remove. An attempt should first of all be made by syringing as for wax. In the case of peas, however, it is better to syringe with warm oil, because water causes the dried pea to swell and block the passage still more. If syringing be ineffectual, no attempt should be made by unskilful persons with hair-pins, bent wires, or the like, to remove the object, which is apt by such means to be pushed through the drum.

BOILS in the skin lining the outer ear give rise to intense pain. This pain is much relieved by running

gently into the ear a quantity of warm carbolic lotion (1 in 40), or by packing the ear lightly with a piece of gauze dipped in a 10 per cent solution of ichthyol in glycerin. Relief is also gained when the boil is lanced.

ECZEMA, consisting of a cracked condition of the skin in the ear, with watery discharge and intense irritation, is common, as an acute affection, in infants, and as a chronic one in gouty and rheumatic adults. In children, syringing with Goulard's water and application of vaseline, with care not to bring soap in contact with the ear for a time, affords relief.

TUMORS in the ear are mostly either outgrowths from the surrounding bone or soft polypi. The former may block the passage and interfere with hearing, but have often a narrow neck, so that they can be easily removed. Polypi usually develop as a result of the irritation set up by a chronic discharge, and shrivel up as the discharge is cured, though a large one may have to be removed in order to get to the drum.

ACUTE INFLAMMATION (otitis) is already referred to under earache.

CHRONIC INFLAMMATION is referred to above, under Discharge from the ear. There is a form of inflammation (catarrh) in which no true suppuration takes place, and, if the drum is not perforated, there is no discharge outwards. This condition, which leads to adhesions about the small bones and thickening of the drum, interferes greatly with hearing, and causes a slowly advancing and most intractable form of deafness. It often runs in families, and is frequently preceded by adenoid growths in the throat during childhood.

MASTOID DISEASE is a serious complication of inflammation in the ear. The mastoid antrum is a cavity situated in the mass of bone which can be felt immediately behind the ear. As a rule, inflammation in this cavity arises by direct spread of a

long-standing suppuration from the middle ear, sometimes in consequence of neglect to keep the ear clean and prevent discharge from accumulating. The signs of this condition are rather vague, but include swelling and tenderness of the skin behind the ear, redness and swelling inside the ear, pain in the side of the head, feverishness, and discharge of foul-smelling, brownish material from the ear. If the condition be left to itself it may, after a period of inflammation, resolve itself without the formation of an abscess, but the dangers are great. More usually an abscess forms, and the pus, if unrelieved, may make its way into the interior of the skull. Accordingly, in early cases, the surgeon makes an incision through the skin behind the ear to relieve congestion, but, as soon as he is convinced that an abscess has formed, he chisels down through the bone of the mastoid process till he can clear out the pus, and completes his operation by making a free communication between the antrum and the ear, so that pus cannot collect again when the outside wound heals.

ECGONINE is another name for cocaine.

ECLAMPSIA is a general name for convulsive seizures of sudden onset. (*See* CONVULSIONS, EPILEPSY, URÆMIA.) The name is especially applied to convulsions arising in connection with pregnancy, which are of a very dangerous type. This condition is said to occur in one out of every 500 cases of pregnancy. It occurs especially in the later months and at the time of delivery, but a certain proportion of cases appear only after delivery has taken place.

There are several warning symptoms, such as dizziness, headache, vomiting, and secretion of urine, which is found to contain albumin. These symptoms may be present for some days or weeks before the seizure takes place.

ECTOPIC means out of the usual

ECTROPION

place. For example, when the heart is displaced towards the right side of the body it is said to be ectopic, while an 'ectopic gestation' means a pregnancy which takes place in some of the organs outside of the womb.

ECTROPION is a condition of the eyelid, usually of the lower lid, in which the skin is contracted so as to turn the red mucous lining of the lid outwards. It is caused usually by scars due to burns and the like, and is remedied by operation.

ECZEMA is a superficial disease of the skin of inflammatory nature, characterised by a scaly and fissured condition of the cuticle, and a sticky watery discharge, and associated with itching or even pain. It is frequently called by the more general term of 'dermatitis' or inflammation of the skin. (*See SKIN, DISEASES OF.*)

The condition is sometimes connected with disorders of digestion or with constipation. In other cases the patient is anæmic, and there are good grounds for believing that many cases, if not caused, are at least aggravated by the growth of organisms in the skin. In some trades eczema is due to substances constantly handled at work.

Treatment.—In regard to diet, the food should be as simple as possible and substances like pickles, spices, pepper, and mustard should be avoided. Alcohol also, which irritates the skin, should not be taken, and the same applies to coffee in the case of some persons. In the milder cases where the skin is reddened, calamine lotion is very soothing. In the cases with much swelling, dusting powders, such as one of starch and talc, is more likely to produce benefit. When there is much discharge with the formation of crusts, a starch poultice applied from time to time removes the crusts and renders the skin more natural, and a paste composed of oxide of zinc, 2 drams, starch, 2 drams, and vaseline, 4

ELBOW

drams, may afterwards be tried. When the eczema is scaly, ointments usually give most relief, a small quantity of tar ointment in vaseline being frequently used for this condition.

EFFERENT is the term applied to vessels which convey away blood or a secretion from a part, or of nerves which carry nerve impulses outwards from the nerve-centres.

EFFUSION means a pouring out of fluid from the vessels in which it is naturally enclosed into the substance or the organs, or into cavities of the body, as a result of inflammation or of injury. For example, we have pleurisy with effusion, effusions into joints, and effusion of blood.

EGG forms a particularly easily digestible article of food, and weighs on an average 2 oz. The yolk of the egg is of special value as a food since it contains the various substances necessary for making up all the bodily tissues. The best test for a stale egg is to dissolve 2 oz. of salt in a pint of water; fresh eggs placed in the solution sink and stale eggs float.

ELATERIUM is the sediment obtained from the juice of the squirting cucumber. It is used as a purgative to produce copious watery motions in cases of pleurisy, dropsy, and apoplexy. It produces in these cases much the same general effect as the old practice of blood-letting used to do.

ELBOW is the joint formed between the humerus above and the radius and ulna below. The ulnar nerve as it passes down to the forearm has an exposed position behind the inner edge of the humerus at its lower end, and is popularly known as the 'funny-bone'. The elbow is seldom dislocated, but a not uncommon accident consists in the chipping off, through a fall on the elbow, of the olecranon process which forms the point behind the joint. *Miner's Elbow* or *Beat Elbow* is the term applied to an inflammatory condition

of the bursa over the point of the elbow, caused by resting the weight of the body on the elbow in hewing coal. The condition corresponds to housemaid's knee in the lower limb, and occurs not only in miners but sometimes in school children and other persons who lean upon or bruise the point of the elbow. (See *BURSITIS*.) *Tennis Elbow* is a term applied to a pain over the lower end of the humerus due to mild inflammation in the bone caused by strains and jars in playing tennis and similar games. *Pulled Elbow* is the name applied to a painful condition of the elbow in young children, constituting a slight dislocation of the head of the radius from beneath the ligament which should bind it to the ulna, caused by a jerk of the hand.

ELECTRICITY IN MEDICINE.—

As electricity has proved to be a form of energy, very wide in usefulness and extremely convenient in application, it has come to be used to a great extent for purposes of medical treatment. Electricity is also of great indirect importance in the use of various instruments and forms of apparatus, for example, in lighting small lamps for examination of the eye, throat, etc., in heating cauteries, and in the production of X-rays, and ultra-violet rays.

Static electricity is sometimes used for the purpose of stimulating the chemical changes which are constantly taking place in the body. It is produced usually by an influence machine consisting of circular plates of glass or vulcanite, which are driven by hand or by a motor in opposite directions. The person is placed upon an insulated couch or chair, and is alternately charged with electricity and discharged from the machine. Electric belts may produce static electricity in very small amount, but the benefit derived from them is chiefly from the support afforded by the belt and from the mental impression gained by wearing it.

Galvanic electricity is usually produced from chemical cells, and is used for several purposes, for example, to light small electric lamps and heat cauteries used in surgical work. It is also employed to carry drugs through the unbroken skin by the process known as ionisation. The galvanic electricity produced by a battery of cells is used for such purposes as the destruction of superfluous hair by electrolysis, and is also very useful when the current is repeatedly interrupted and closed for stimulating paralysed muscles in various nervous diseases, and thus checking their wasting.

Faradic electricity, which consists of a rapid series of electric discharges induced in one coil by rapidly closing and opening the current in another, is one of the most convenient forms for the medical application of electricity. The apparatus employed is usually contained in a small box a few inches square. This form of electricity is employed by applying two electrodes, rendered damp by salt solution, separated from one another by a few inches, to the affected part of the body. It is used for treating painful conditions such as headache and rheumatism, also for stimulating weak muscles, and with the help of a larger apparatus, is useful in treating corpulence.

Alternating or sinusoidal currents, derived from the electric mains, are used for driving other electrical machines, or when suitably reduced, can be employed in a manner similar to the faradic currents.

High frequency currents are developed by elaborate apparatus, and are used in several important ways. Such currents, for example, are passed through the body as the patient lies upon a couch, for the purpose of exerting a general stimulating effect. These currents are also used by the process of diathermy for producing heat within the body. The latter process is of use in heating

ELECTRO-CARDIOGRAM

cauteries for bloodless operations, and in a milder degree is very commonly used for the treatment of various forms of rheumatism by passing the current through the affected joint.

The following conditions are some of those in which electricity is most frequently employed. Pain as in headache, chronic rheumatic conditions, sciatica, etc., is often treated by the faradic current, static electricity, or diathermy.

Spasmodic conditions like cramp are often relieved by strong galvanic currents applied to the cramped muscles.

Debility, neurasthenia, and other conditions of weakness are frequently benefited by static electricity, or by faradic electricity passed through a warm bath in which the patient lies.

Paralysis of certain types, such as infantile paralysis, is often much benefited by applications of the interrupted galvanic or the faradic current, or by the two combined.

ELECTRO-CARDIOGRAM is the term applied to a record of the variations in electric potential which occur in the heart as it contracts and relaxes.

ELECTUARY, or **CONFECTION**, is a soft paste containing drugs mixed with sugar or honey. (*See CONFECTION.*)

ELEPHANTIASIS, or *Barbados Leg*, is a term applied to a disease which is characterised by a peculiar overgrowth of the skin and underlying textures. This condition appears to arise from repeated attacks of inflammation of the skin and obstruction of the veins and lymphatic vessels of the part.

ELIXIR is a diluted tincture made pleasant to the taste by the addition of aromatic substances and sugar. Compound elixir of kola, and elixir roborans, containing cinchona, are valuable tonics in debility.

EMACIATION (*see* **WASTING**).

EMBOLISM means the plugging of

EMOLLIENTS

a small blood-vessel by some material which has been carried through the larger vessels by the blood stream.

EMBROCATIONS are mixtures, usually of an oily nature, intended for external application in cases of rheumatism, sprains, and other painful conditions. Their action is due partly to the massage employed in rubbing in the embrocations, partly to a counter-irritant action which the drugs contained in them may exert. (*See* **LINIMENTS**.)

EMBRYO means the foetus in the womb prior to the middle of the second month.

EMESIS means vomiting. (*See* **VOMITING**.)

EMETICS are drugs or other means which produce vomiting.

Emetics are used when some article of diet is proving indigestible, and setting up pain, headache, etc. For this purpose large draughts of warm salt water, or a tablespoonful of mustard in a tumblerful of cold water, are simple emetics. In cases of poisoning, a rapidly acting and more certain emetic is required. Sulphate of zinc (20 grains, repeated if necessary) is rapid and effective. When secretions are accumulating in the air passages and not properly removed by coughing, an emetic is often given to clear these passages, with good results. For this purpose ipecacuanha wine is generally chosen and administered in doses of a teaspoonful to a child, and a tablespoonful or more to an adult.

EMETINE is one of the active principles of ipecacuanha.

EMMENAGOGUES are drugs which restore the flow at the menstrual periods, when this is scanty or absent.

EMMETROPIA is a term applied to the normal condition of the eye as regards refraction (focussing) of light rays.

EMOLLIENTS are substances which have a softening and soothing effect upon the tissues of the body. A combination of warmth and moist-

EMPHYSEMA

ure, such as that presented by poultices of oatmeal, starch, bread, or linseed, has the greatest softening effect upon skin surfaces. Ointments, soap, and glycerin also act in this way, as do also albuminous and gummy substances like white of egg, isinglass, and mucilage of acacia.

EMPHYSEMA means an abnormal presence of air in certain parts of the body. In its restricted sense, however, it is generally employed to designate a peculiar affection of the lungs, in which there is over-distension of the air-cells of these organs, and in parts destruction of their walls, giving rise to the formation of large sacs.

Symptoms.—The chief symptom in this complaint is shortness of breathing, more or less constant but greatly aggravated by exertion, and by attacks of bronchitis, to which persons suffering from emphysema are specially liable. The respiration is of similar character to that already described in the case of asthma. In severe forms of the disease the patient comes to acquire a peculiar bluish and bloated appearance, and the configuration of the chest is altered, assuming the character known as the *barrel-shaped* chest.

Treatment.—The main element in the treatment of emphysema consists in attention to the general condition of the health, and in the avoidance of all causes likely to aggravate the disease or induce its complications. The same general plan of treatment as that recommended in asthma and bronchitis is applicable in emphysema. During attacks of urgent breathlessness antispasmodic remedies should be had recourse to, while the employment of dry cupping back and front over the lungs, together with inhalation of oxygen, will often afford marked and speedy relief.

EMPLASTRUM is the Latin term for a plaster.

EMPYEMA is a term applied to an

EMPYEMA

accumulation of purulent fluid within a cavity, the term being generally reserved for collections of fluid within one of the pleural cavities. The condition is virtually an abscess, and therefore gives rise to the general symptoms accompanying that condition; but, on account of the thick unyielding wall of the chest, it has very little tendency to burst through the surface, and therefore it is of particular importance that the condition should be recognised early, and, as a rule, treated by surgical means.

The condition most commonly follows some inflammatory process in the lung, especially an attack of acute pneumonia.

Symptoms.—In empyema following a case of pneumonia, symptoms of the former generally appear as the pneumonia is subsiding, and when an ordinary attack of pneumonia does not come satisfactorily to an end after the lapse of eight to ten days, it is usual for the physician to suspect and search for the signs of empyema. A certain amount of inflammation in the membrane lining the pleural cavity always accompanies pneumonia, and the fluid which is thus produced may show any stage between that of clear yellow serous fluid and thick pus of the consistence of cream. When the fluid is clear or merely turbid, absorption generally takes place naturally in course of time, and the mild type of infection which is present is readily overcome by the ordinary powers of the tissues. When, however, a severe infection is present, the fluid is of the thicker purulent variety, and active measures of treatment are required. In any case, the temperature of the patient, which should revert to normal at the end of the attack of pneumonia, tends to show a daily rise to 102° or 103°; there is profuse sweating and the patient presents a flushed appearance. The severity of these symptoms is proportional to the degree

EMULSIONS

of virulence in the infection of the pleural membrane, the symptoms generally being less marked the clearer the fluid.

Treatment.—In those cases where the fluid is clear or only slightly turbid, the measures commonly employed for pleurisy (*see* PLEURISY) are very often sufficient to bring about absorption. In cases where the fluid is thick and purulent, it is usually necessary to perform an operation for the drainage of the cavity, an incision being made through the skin and a portion of rib removed. The fluid is thus evacuated, and the lung can then expand naturally against the chest wall, a drainage tube being left in the wound so that the cavity can be washed out and any fresh fluid which tends to collect can escape freely until the natural closure of the cavity is completed. For some months or years after such an operation the entrance of air into the part of the lung round the wound is usually somewhat restricted, but in the great majority of cases the lung ultimately reverts completely to a normal state.

EMULSIONS are mixtures containing oily substances, in a state of very fine division. The division is effected and the oil kept suspended in the fluid by means of alkalies and sticky ingredients such as albumin, glycerin, or mucilage. Milk is an example of a very perfect emulsion of fat globules each surrounded by an envelope of albumin. The various preparations of cod-liver oil are usually emulsified by the aid of glycerin. The oil is not only rendered more devoid of taste, but digestion and absorption are also rendered easier by emulsification.

EMUNCTORY is a term applied generally to excretory organs, such as the kidneys and bowels.

ENAMEL is a thin, hard, transparent layer which covers the surface of the teeth, at least that part of them which projects above the gums. It is composed almost entirely of the

ENCEPHALITIS LETHARGICA

earthy salts found in bone, and is the hardest tissue in the body.

ENCEPHALITIS means inflammation of the contents of the head, *i.e.* the brain.

ENCEPHALITIS LETHARGICA, also known as SLEEPY SICKNESS and as INFLAMMATION OF THE BRAIN, is a disease that appears from time to time, especially in spring, in the form of epidemics. It commonly attacks persons who are overworked or temporarily in poor health.

Symptoms.—The illness begins usually with rise of temperature and increasing drowsiness or lethargy which may gradually proceed to a state of complete unconsciousness. In some cases, however, the patient instead of being drowsy passes at first through a stage of restlessness which may amount to maniacal excitement. As a rule the drowsiness deepens somewhat gradually over a period of a week or more, and accompanying it there appear various forms of paralysis, shown by drooping of the eyelids, squint, and weakness of one or both sides of the face. The nerves controlling the muscles of the throat are also sometimes paralysed, causing changes in the voice and difficulty in swallowing. In some cases the disease affects the spinal cord, producing severe pain in one or more of the limbs, and it is frequently followed by partial paralysis. Signs of inflammation are not infrequently found in other organs, and hæmorrhages may be visible beneath the skin and in the muscles, or blood may be vomited up or passed in the stools. The effects last usually for many months, the patient remaining easily tired and somnolent or frequently showing tremors resembling those of shaking palsy. Many cases which result in physical recovery are left with profoundly deteriorated mental powers.

Treatment.—The recognition of typical cases is not difficult from the lethargic condition which is com-

ENCYSTED

monly present, but in some of the unusual types diagnosis is only made with considerable difficulty from the other diseases which the condition resembles. Various sera have been recommended with a view of checking the process of inflammation and small hæmorrhages in the brain. A method to which recourse is sometimes had for a similar purpose is the production of an abscess in some muscle at a distance from the nervous system, *e.g.* in the thigh, by the injection of a small amount of turpentine. The patient requires careful nursing and feeding and the administration of general remedies for symptoms, such as excitement, when they arise. The tremors and weakness, which are apt to follow at a late stage, are often greatly benefited by hyoscine or stramonium.

ENCYSTED means enclosed within a bladder-like wall. The term is applied to parasites, collections of pus, etc., which are shut off from surrounding tissues by a membrane or by adhesions.

ENDARTERITIS means inflammation of the inner coat of an artery.

ENDEMIC is a term applied to diseases which exist in particular localities or amongst certain races. Some diseases which are at times epidemic over wide districts, have a restricted area, where they are always endemic, and from which they spread. For example, both cholera and plague are endemic in certain parts of Asia.

ENDOCARDITIS means inflammation of the smooth membrane lining the heart. It occurs especially over the heart valves. (*See HEART, DISEASES OF.*)

ENDOCRINE GLANDS is a term applied to certain organs whose function is to secrete into the blood or lymph a substance which plays an important part in regard to general chemical changes or to the activities of other organs at a distance. Various diseases arise as the result of defects

ENDOCRINE GLANDS

or excess in the internal secretions of the different glands. The chief endocrine glands are the thyroid gland, adrenal bodies, pituitary body, parathyroid glands, pancreas, ovaries, and testicles.

THYROID GLAND.—This gland, situated in front of the neck, produces in large quantities a secretion which has a very important effect in regulating the general nutrition of the body. When it is defective, the conditions known as myxœdema and cretinism result; while excess or perversion of the secretion is associated with different types of the condition generally known as exophthalmic goitre.

ADRENAL BODIES.—These two glands, also known as SUPRARENAL GLANDS, lie immediately above the kidneys. When their secretion is defective, as, for example, owing to the presence of tuberculous disease in the glands, a condition of great and progressive weakness develops, known as Addison's disease.

PITUITARY GLAND.—This gland is attached to the base of the brain and rests in a hollow on the base of the skull immediately above the hinder part of the throat. The secretion appears to be absorbed into the fluid found within the brain, and it has an important action upon the processes of growth and nutrition.

PARATHYROID GLANDS.—These are four minute glands lying at the side of or behind the thyroid. When their secretion is defective, a spasmodic condition is apt to appear in the muscles, which can be relieved to some extent by the administration of an extract.

PANCREAS.—This gland is situated in the upper part of the abdomen and, in addition to the digestive ferments which it produces, a substance known as insulin is absorbed from it into the circulating blood. This has the effect of adapting sugary foods for incorporation in the muscles and other tissues that particularly require such foodstuffs. Its defect is followed by

ENDOMETRITIS

the production of the disease known as diabetes.

OVARIES AND TESTICLES.—In addition to their main function of producing reproductive cells, these organs appear to secrete substances which have a general effect upon the other bodily tissues.

ENDOMETRITIS means inflammation of the mucous membrane lining the womb. (*See UTERUS, DISEASES OF.*)

ENDOTHELIUM is the term applied to the membrane lining various vessels and cavities of the body.

ENEMA means an injection of fluid into the bowel.

Uses.—**PURGATIVE ENEMATA** are given generally in large bulk, so as to distend the rectum, and they contain also various stimulating substances. For an adult, 1 to 2 pints are injected, for a young child about 6 ounces. The process of injection should be slow, and the person should retain the enema as long as he can, in order to obtain the maximum effect. The water may be cold or tepid, and may contain soap, or a wineglassful of castor oil or olive oil, or a large tablespoonful of Epsom salts. To expel flatulence, two tablespoonfuls of turpentine may be added to each pint of warm water. Instead of water, a couple of teaspoonfuls of pure glycerin may be used, or half a pint of warm olive oil. The frequent use of enemata is unhealthy, because they gradually distend the bowel, especially if injected warm, and so ultimately increase the constipation.

SEDATIVE ENEMATA are used to quiet spasm, and check excessive action of the bowels. In very painful conditions of the bowel and of surrounding organs, 4 ounces of thin starch containing 20 drops of laudanum and injected tepid gives great relief.

NUTRIENT ENEMATA are given when the stomach is seriously deranged and cannot retain or cannot digest food. A nutrient enema, which is almost

ENTERIC FEVER

completely absorbed, consists of dextrose 5 per cent solution in normal saline solution, that is, $\frac{1}{2}$ oz. of dextrose and $\frac{1}{2}$ teaspoonful of common salt to $\frac{1}{2}$ pint of warm water. The nutrient enema must be administered very slowly, and preferably run in through a small funnel and catheter tube. It may be given, to the amount of 8 or 10 ounces, every 4 hours, that is, five times in 24 hours. When it is well retained, this form of nutrition may be continued, if necessary, for several weeks, without any food by the mouth, and without the patient losing more than 2 or 3 pounds in weight per week.

ENEMATA FOR THREAD-WORMS in children should consist of 4 to 6 ounces of strong brine made from common salt and water, or the same amount of infusion of quassia.

Mode of administration.—The instrument used for nutrient enemata should be an india-rubber tube with a funnel at one end, and soft rubber nozzle, with rounded end, at the other. For purgative enemata, the rubber syringe with a ball in the centre may be used, and for small enemata an india-rubber bag which contains the exact amount required. In all cases where the sick person does not himself introduce it, the old bone or metal nozzle should be replaced by a soft rubber one, because much pain and injury may be inflicted by a rigid one carelessly or forcibly introduced.

The patient lies upon his left side with the hips raised on a thick pillow, and should remain so after the enema has been given. The nozzle is oiled, introduced forwards and upwards with a screwing motion, and should be passed gently up for 3 or 4 inches. The fluid is now pumped, or, if a tube and funnel be used, allowed to flow gently in by raising the funnel.

ENTERALGIA is another name for colic.

ENTERIC FEVER, or **TYPHOID FEVER**, is a continued fever characterised mainly by its insidious onset,

ENTERIC FEVER

by a peculiar course of the temperature, by marked abdominal symptoms occurring in connection with a peculiar ulceration of the bowels, by an eruption upon the skin, by its uncertain duration, and by a liability to relapses.

A bacillus is the direct cause of the malady.

Symptoms.—The most marked of the early symptoms are headache, lassitude, and discomfort, together with sleeplessness and feverishness, particularly at night; this last symptom is that by which the disease is most readily detected in its early stages. Bleeding at the nose is also an early symptom in many cases. Although the patient may, during the earlier days of the fever, be able to move about, he feels languid and uneasy; and usually before the first week is over he has to take to bed, and soon the effects of the attack become more apparent. He is restless, hot, and uncomfortable, particularly as the day advances. The *tongue* has at first a thin whitish fur and is red at the tip and edges. It tends, however, to become dry, brown or glazed-looking, and fissured transversely, while foul, brownish material may be present about the lips and teeth. There is much thirst and in some cases vomiting.

Diarrhœa is a frequent but by no means constant symptom.

About the beginning, or during the course of the second week of the fever, an *eruption* frequently makes its appearance on the skin. It consists of small isolated spots, oval or round in shape, of a pale pink or rose colour, which are seen chiefly upon the abdomen, chest, and back, and they come out in crops, which continue for four or five days and then fade away.

When death takes place, it is generally due to one of the following causes: (1) Exhaustion in the second or third week or later; (2) hæmorrhage from the bowels; (3) perforation of an ulcer and the onset of periton-

ENTERITIS

itis; (4) excessive rise of temperature; (5) complications, such as inflammation of the lungs.

Treatment.—The preventive treatment includes all the municipal and domestic measures that aim at securing pure supplies of water and milk and well-laid drains. Inoculation with anti-typhoid vaccine is a precaution which ought to be adopted by persons about to proceed to a country, such as India, where the disease is rife.

When an outbreak of typhoid fever occurs in a family, the source of the milk supply especially should be scrutinised. The discharges of a typhoid patient should be mixed so soon as passed with a strong disinfectant (*see* DISINFECTION). Similar care should be taken to sterilise all sheets, towels, etc., soiled by the patient. Special care is necessary on the part of those in attendance upon a typhoid fever case to cleanse the hands at once after touching the patient, and especially after they have become in any way soiled by contact with his discharges.

Very special care is necessary in typhoid fever with regard to diet. Milk is of great service, but it must be administered with due regard to time and to the digestive powers of the patient. The usual quantity given is from 3 to 4 oz. regularly administered every two or three hours, that is, $1\frac{1}{2}$ to 2 pints daily. In the intervals water or other fever drink may be given from time to time.

In the convalescent stage, and even after apparently complete recovery, the utmost care should be observed by the patient as to diet, all hard and indigestible substances being dangerous from their tendency to irritate or reopen unhealed ulcers, and bring on a relapse of the fever or cause a sudden perforation. Lastly, the general health demands careful attention for a length of time, in view of the risks of chest and other diseases.

ENTERITIS means inflammation

ENTEROCELE

of the intestines. (*See* DIARRHŒA, and *INTESTINES, DISEASES OF.*)

ENTEROCELE means a hernia of the bowel. (*See* HERNIA.)

ENTEROPTOSIS means a condition in which, owing to a lax condition of the mesenteries and ligaments which support the bowels, the latter descend into the lower part of the abdominal cavity.

Treatment.—Massage of the abdominal muscles and viscera, and the wearing of a well-shaped abdominal belt (*see* BELTS), give most relief.

ENTEROSTOMY means an operation by which an artificial opening is formed into the intestine.

ENTOZOA are animals which are occasionally found within the human body, and derive nourishment from its fluids, or from the digested food. (*See* WORMS.)

ENTROPION means a condition in which, as a result of disease, the edge of the eyelid is turned inwards towards the ball of the eye.

ENURESIS means the unconscious or involuntary passage of urine. (*See* URINE.)

ENZYME is the name applied to a chemical ferment produced by living cells.

EPHEDRINE is an alkaloid derived from a Chinese plant, much used for asthma, in doses of about $\frac{1}{2}$ grain.

EPHELIS means sunburn, or brown discoloration of the skin produced by constant exposure to great heat.

EPIDEMIC is a term applied to a disease which affects a large number of people in a particular locality at one time. The term is in a sense opposed to 'endemic', which means a disease always found in the locality in question.

EPIDYDIMIS is the name applied to an oblong body attached to the upper part of each testicle, composed of convoluted vessels and ducts. It is specially liable to be the seat of tuberculosis and other forms of inflammation.

EPILEPSY

EPIGASTRIUM is the region lying in the middle of the abdomen over the stomach.

EPIGLOTTIS is a leaf-like piece of elastic cartilage covered with mucous membrane, which stands upright between the back of the tongue and the entrance to the larynx. It plays an important part in the act of swallowing, preventing fluids and solids from passing directly off the back of the tongue into the larynx.

EPILATION means the removal of hair by the roots. (*See* DEPILATION.)

EPILEPSY, or **FALLING SICKNESS**, is a term applied to a nervous disorder characterised by fits of sudden loss of consciousness, usually with convulsions.

Symptoms.—Although in most instances an epileptic attack comes on suddenly, it is in some cases preceded by certain warnings. These are of very varied character, and may be in the form of some temporary change in the disposition, such as unusual elevation or depression of spirits, or of some alteration in the look. Besides these general symptoms, there are frequently peculiar sensations which immediately precede the onset of the fit, and to such the name of *aura* is applied. The *aura* may be so distinct and of such duration as to enable the patient to lie down or seek a place of safety before the attack comes on.

The seizure is usually preceded by a loud scream or cry, which is not to be ascribed, as was at one time supposed, to terror or pain, but is due to the convulsive action of the muscles of the larynx and chest. If the patient is standing he immediately falls, and often sustains serious injury. Unconsciousness is complete, and the muscles generally are in a state of stiffness or tonic contraction, which may be found to affect those on one side of the body in particular. The head is turned towards one or other shoulder, the breathing is for the moment arrested, the counte-

nance first pale then livid, the pupils dilated, and the pulse rapid. This, the first stage of the fit, generally lasts for about half a minute, and is followed by the state of clonic (*i.e.* tumultuous) spasm of the muscles, in which the whole body is thrown into violent agitation. The eyes roll wildly, the teeth are gnashed together, and the tongue is often severely bitten. The breathing is noisy and foam (often tinged with blood) issues from the mouth, while even the contents of the bowels and bladder may be ejected. This stage lasts for a period varying from a few seconds to several minutes, when the convulsive movements gradually subside, and relaxation of the muscles takes place, together with partial return of consciousness, the patient looking confusedly about him and attempting to speak. This, however, is soon followed by drowsiness and stupor, which may continue for several hours, when he awakes either apparently quite recovered, or fatigued and depressed, and occasionally in a state of excitement which sometimes assumes the form of mania.

The other type of epilepsy, to which the name *petit mal* is given, differs from that above described in the absence of the convulsive spasms, and consists in the sudden arrest of consciousness, which is of but short duration, and may be accompanied with staggering or some alteration in position or motion, or may simply exhibit itself in a look of absence or confusion, and, should the patient happen to be engaged in conversation, by an abrupt termination of the act. In general, it lasts but a few seconds, and the individual resumes his occupation without perhaps being aware of anything having been the matter.

Numerous cases are on record of persons known to be epileptic being suddenly seized, either after or without apparent spasmodic attack, with

some sudden impulse, in which they have used dangerous violence to those beside them, without malevolent intention, as appears from their retaining no recollection whatever, after the short period of excitement, of anything that had occurred. This type of unconscious act, which may be of a violent nature or may consist merely in a series of ordinary actions of which the epileptic is quite unconscious, is known as *epileptic automatism*.

Treatment.—During the fit, little can be done beyond preventing the patient as far as possible from injuring himself while unconsciousness continues. Tight clothing should be loosened, and a cork or pad inserted between the teeth. When the fit is over, the patient should be allowed to sleep, and have the head and shoulders well raised.

In the intervals of the attacks, the general health of the patient is one of the most important points to be attended to. The total abstinence from all forms of alcohol is essential. Bromide of potassium is the remedy now generally employed in the treatment of epilepsy. This, given in from 10- to 30-grain doses three times a day, is generally followed by some improvement and, in a few instances, by apparent cure. Its employment, moreover, can be persevered with for a long time with little inconvenience. A remedy which has also given good results in some cases is luminal or gardenal, which is given in doses of 1 to 3 grains.

As regards diet, the red meats are generally forbidden, and the avoidance of salt has recently been shown to aid the effect of the bromide. A diet specially rich in fats appears to benefit some epileptics.

For epileptics in whom fits recur frequently and for whom employment in busy places is dangerous or unobtainable, some form of agricultural work is the most suitable. 'Epileptic colonies' have been established in

EPIPHORA

many places where persons afflicted in this way can carry out productive work under safe conditions.

EPIPHORA means a condition in which tears, instead of passing from the eye down into the nose, run over on the cheek. It is due to blocking of the tear-ducts.

EPIPHYSIS means the spongy extremity of a bone, attached to it for the purpose of forming a joint with the similar process of another bone.

EPISPASTICS are substances which produce blistering of the skin. (See **BLISTERS**.)

EPISTAXIS means bleeding of the nose. (See **HÆMORRHAGE**.)

EPITHELIOMA is a tumor of malignant nature arising in the epithelium covering the surface of the body. (See **CANCER**.)

EPITHELIUM means the cellular layer which upon the skin forms the cuticle, covers the inner surface of the bowels, and forms the lining of ducts and hollow organs like the bladder, generally.

EPIZOOTIC is a term applied to any disease in animals which diffuses itself widely. The term corresponds to the word epidemic as applied to human beings, and it is generally understood that epizootic diseases do not affect man, for example foot-and-mouth disease in cattle.

EPSOM SALTS is the popular name for sulphate of magnesium, a commonly used saline purgative. For a dose, a heaped teaspoonful or more of the salt should be mixed with as little water as will dissolve it, and taken in the morning before breakfast, or the same quantity may be taken divided into three or four small doses, one of which is taken every quarter of an hour. (See **PURGATIVES**.)

External fomentations of 25 per cent magnesium sulphate solution are frequently applied in cases of rheumatic joints, erysipelas, and other forms of inflammation. It has

ERYSIPELAS

also been used for injection beneath the skin or into the spinal canal in the treatment of tetanus, eclampsia, and other convulsive disorders.

EPULIS is a term applied to any tumor connected with the jaws.

EQUINIA (see **GLANDERS**).

ERGOT is the spawn of a fungus which grows in the grain of rye.

Preparations of ergot are used mainly to check hæmorrhage, particularly that which is apt to follow upon childbirth.

EROSION means a process of gradual wearing down of structures in the body. The term is applied to the effect of tumors.

ERRHINES are drugs which cause running at the nose, e.g. iodide of potassium.

ERUCTATION, or belching, means the sudden escape of gas or of portions of half-digested food from the stomach up into the mouth. The production of gases in the stomach is usually associated with dilatation of that organ. In this case evil-smelling gases may be brought up some hours after taking a meal, especially when starchy or sugary foods have been taken in large amount. Many nervous persons, and also persons who suffer from acid dyspepsia, have a bad habit of gulping down mouthfuls of air when digestion is uncomfortable. This air is after a little while belched up again. Eructations of extremely sour fluid prove the existence of acid dyspepsia. (See **DYSPEPSIA**.)

ERUPTION, or **RASH**, means an outbreak, in a scattered form, upon the surface of the skin, usually raised and red, and, it may be, also covered with scales, or crusts, or vesicles containing fluid. For chronic eruptions see **SKIN DISEASES**.

ERYSIPELAS, also known as *the Rose* and *St. Anthony's Fire*, is a disease characterised by diffuse inflammation of the skin, or of the cellular tissue beneath it, and with fever.

Symptoms.—When the erysipelas is of moderate character, there is simply a redness of the skin, which feels somewhat hard and thickened, and upon which there often appear small vesicles. This redness tends to spread and affect the neighbouring sound skin, until an entire limb or a large area of the body may become involved in the inflammatory process. There is usually considerable pain, with heat and tingling in the affected part.

Erysipelas of the face usually begins with symptoms of general illness, the patient feeling languid, drowsy, and sick, while frequently there is a distinct shivering followed by fever, and the temperature may rise to 104° or 105°. Sore throat is sometimes felt, but, in general, the first indication of the local affection is a red and painful spot at the side of the nose or on one of the cheeks or ears. The redness gradually spreads over the whole surface of the face, and is accompanied with swelling, which, in the lax tissues of the cheeks and eyelids, is so great that the features soon become unrecognisable and the eyes quite closed. The spreading edge of the red area is usually sharply marked and raised. Delirium is a frequent accompaniment. The attack in general lasts for a week or ten days, during which the inflammation subsides in the parts of the skin first attacked, while it spreads onwards in other directions, and after it has passed away there is some slight shedding of the skin.

Treatment.—In the majority of cases, attention to the functions of the stomach and bowels, with a diet consisting of plenty of easily digested food, is of chief importance. Some physicians recommend tincture of perchloride of iron to be taken internally in large doses. In more serious cases, where the person is highly fevered and exhausted, food of a stimulating kind is necessary and strong soups with various kinds of

meat extracts may be given. As a rule, alcohol, which tends to increase the congestion of the skin, should be strictly forbidden.

As regards local treatment, it is sometimes sufficient in slighter cases to dust the affected part with a mixture of starch and boric acid powder and to wrap it in cotton-wool so as to prevent exposure to changes of temperature. When the pain is very great, as for example in erysipelas of the scalp, hot fomentations of lead and opium lotion may be applied instead of the wool. A very successful method of treating early cases and preventing their further development consists in smearing on and for some distance around the discoloured area a mixture of ichthyol (1 part) in glycerin (4 parts).

ERYTHEMA is a general term for several conditions in which areas of the skin become congested with blood, and consequently a red eruption appears. The eruption is accompanied by tingling, and often by itching and pain.

A variety, which appears, usually on the front of the legs, in the form of red or livid, tender swellings, often over an inch in breadth, is known as 'erythema nodosum', and is almost always a manifestation of rheumatism, and yields to the ordinary remedies for this condition. (See RHEUMATISM.)

ERYTHROCYTE is another name for a red blood corpuscle.

ERYTHROMELALGIA, or RED NEURALGIA, is a condition in which the fingers or toes, or even larger portions of the limbs, become purple, bloated in appearance, and very painful. The only relief is got, as a rule, by elevation, rest in bed, and application of cold.

ESCHAR is a piece of the body killed by heat or caustics.

ESSENCES are strong solutions of active substances, for example, essence of rennet, essence of pancreatin. Some of these are made by solution in water, but the aromatic essences are usually

solutions of volatile oils (*e.g.* essence of peppermint, essence of vanilla), in rectified spirit of the strength 1 in 5.

ETHER, or **ETHYL OXIDE**, is a colourless, volatile, highly inflammable liquid formed by the action of sulphuric acid upon alcohol, with the aid of heat, and therefore sometimes called sulphuric ether.

Externally it is used as a cleansing agent before operations, because it is strongly antiseptic and, dissolving as it does the fat from the small cracks and entrances to the hair follicles, it renders the surface more accessible to water. It has also been used externally as a freezing agent to abolish sensation for small operations, though, in this respect, its place is now taken by ethyl chloride. By inhalation it is used as a general anæsthetic.

ETHMOID is the name of a bone in the base of the skull which separates the cavity of the nose from the membranes of the brain.

ETHYL BROMIDE and **ETHYL CHLORIDE** are clear, colourless liquids used to produce insensibility to pain for small and short operations. Ethyl chloride is put up in graduated glass or metal tubes, with a fine nozzle. The tube is warmed by the hand, and the liquid jets out in a fine spray which evaporates at once and so freezes the skin upon which it is sprayed. Ethyl chloride is also used by inhalation to produce general anæsthesia for very brief operations, such as removal of tonsils and tooth extraction.

ETIOLOGY means the group of conditions which form the cause of any disease.

EUCAINE is a substance closely resembling cocaine both in chemical composition and in action upon the body, but, while cocaine is extracted from a plant, eucaine is a laboratory product.

EUCALYPTUS, or **BLUE-GUM**, is a tree, originally a native of Australia, and now grown all over the world. Its important constituent, oil of

eucalyptus, is an oil of pleasant smell and spicy taste, which is obtained by distillation from the leaves of the tree.

The oil is largely used as a disinfectant and deodorant. Two ounces of oil of eucalyptus, placed in a porous earthenware vessel so as to impregnate its substance, will keep the air of a water-closet, in which the vessel is suspended, perfectly free from smell for several months. For a similar purpose, it may be mixed with eight times its weight of sawdust and used to sprinkle on floors.

As an inhalation, oil of eucalyptus may be mixed with smelling-salts, or a teaspoonful may be stirred into hot water in a jug or bronchitis kettle. This is useful both for checking a cold or influenzal attack, and for relieving headache.

EUGENICS is a term applied to the study and cultivation of conditions that may improve the physical and moral qualities of future generations.

EUONYMIN is a dry extract made from the bark of the Wahoo-tree, a native of the United States. It has a mild purgative action, and to some extent also stimulates the liver. It is given usually in doses of 1 grain combined with other purgatives in a pill.

EUPAD is a mixture of calcium chloride and boric acid, 25 grams of which dissolved in 1 litre of water form 'eusol'.

EUSOL (*see* **HYPOCHLOROUS ACID**).

EUSTACHIAN TUBES are the passages, one on each side, leading from the throat to the middle ear.

EVACUANT is a name for a purgative medicine.

EXALGIN is a drug mainly used for the relief of pain. (*See* **ANTI-PYRINE**.)

EXANTHEMATA is an old name used to classify the acute infectious diseases distinguished by a characteristic eruption.

EXCISION means literally a cutting out, and is a term applied to the removal of any structure from the

EXCITEMENT

body, when such removal necessitates a certain amount of separation from surrounding parts.

For the excision of joints see under **JOINT DISEASES**.

EXCITEMENT (*see* DELIRIUM, HYSTERIA, and INSANITY).

EXERCISE is a matter of great importance in the maintenance of health, not so much to the young, in whom the expenditure of energy is generally as natural as breathing; nor to the labouring classes, whose daily work provides them with sufficient exertion, but more to those who practise sedentary callings, and to the well-to-do and indolent.

Want of exercise.—The failure to perform at least a considerable part of the natural amount of work is followed by many bad results. In the young the muscles and bones do not develop as they should, and though they may increase in length they remain thin and puny. Further, the muscles which support the back become readily tired, producing 'round shoulders', or, since they are as a rule more tired on one side than on the other, causing curvature of the spine with elevation and 'throwing forward' of one shoulder. Deficient expansion of the chest is the result of never making special efforts in breathing, and this deformity is one of the chief predisposing causes of consumption. Where a single limb or one side of the body is not used in consequence of paralysis, the muscles undergo fatty degeneration and the joints become stiff. In those more advanced in years, faulty chemistry of the body, with bloodlessness, dyspepsia, and constipation, sets in when exercise and fresh air are insufficient. And, in the middle-aged, obesity, accompanied by degeneration of the heart muscle and blood-vessels, with a fat and flabby condition of all the muscles, is the result. (*See* CORPULENCE.) Further, the person who refrains from exercising his or her body in a rational

EXERCISE

manner, becomes a prey to all kinds of morbid inclinations.

Over-exercise, on the other hand, is equally bad. As a result of habitual over-exertion of certain muscles, though these muscles increase in size at first, actual wasting results later on. This appears, for example, in the thigh muscles of those who ride on horseback a great deal without other exercise. Persons who make great efforts beyond the capacity of their strength, particularly in running, are apt to bring on dilatation of the right side of the heart and emphysema of the lungs (*see* EMPHYSEMA), causing a form of 'asthma'. A similar condition is known in horses as 'broken-windedness'. A result of overstrain found in athletes is varicose veins. Persons who in youth engage in very athletic sports, such as rowing or racing, and who in later life do not keep up a fair amount of exercise, deteriorate much more than persons of poorer physique, being specially prone to accumulation of fat and to fatty degeneration of the over-developed heart. Some of the more immediate dangers of over-exertion are the following: a loss of tone and vigour, known as 'over-training' or 'growing stale', results from some error of training, usually in diet, from actual exhaustion of the muscles, or from weakness of some internal organ. Dilatation of the heart is one of the commonest results of overstrain in those who have not had a proper course of 'training', and occurs especially after a long foot or cycle race. It may be transitory, producing breathlessness and pain in the chest, which pass off after half an hour's rest upon the back. Complete recovery may not take place, however, for some months or years. In persons who have a diseased heart-valve this may give way under great strain, causing sudden death. Accordingly, no person with valvular disease should indulge in racing. Rupture of a

EXFOLIATION

muscle with formation of a painful swelling or even dislocation of a joint or fracture of a bone sometimes follows a single excessive effort, such as throwing a cricket-ball. Rupture of a blood-vessel in the brain, lung, or eye is a more serious matter, but seldom occurs, except in elderly people, or in those who have diseased arteries. Hernia, or the forcing of some organ through the muscular wall of the abdomen, may result from a sharp, sudden strain, like a standing high-jump. By no means an uncommon result of training and over-exertion in those who are not perfectly sound is the rousing up of dormant lung or kidney disease, which otherwise might never have appeared.

Training involves a certain regimen and practice prior to engaging in special athletic efforts. The objects of training generally speaking are :

(1) To accustom certain muscles to perform a particular act, as, for example, the thigh and leg muscles to contract sharply and in a particular order for jumping ; (2) to render the requisite muscles as large as possible, and remove, as far as may be, the fat deposited in and around them which impedes their action ; (3) to strengthen the heart and deepen the breathing for prolonged efforts ; and (4) to bring the whole body, and especially the nervous system, to a state of perfect health. For these objects, a course of special practice, combined with various general exercises, lasting usually over three weeks before the event for which the training is intended, is combined with a healthy form of diet. Different trainers have, in addition, special rules of their own, usually founded on experience.

EXFOLIATION means the separation, in layers, of pieces of dead bone or skin.

EXOPHTHALMIC GOITRE means a disease in which there is a variety of enlargement of the thyroid gland in front of the neck, associated with

EXPECTORATION

protrusion of the eyes and other symptoms. (*See GOITRE.*)

EXOSTOSIS means an outgrowth from a bone, usually the result of some form of inflammation. (*See BONE, DISEASES OF.*)

EXPECTANT is a term applied to a form of treatment in which the cure of the patient is left mainly to nature, while the physician simply watches for any unsatisfactory developments or symptoms, and relieves them if they occur.

EXPECTORANTS are drugs which assist the removal of secretions from the air passages.

The following are examples : steam inhalations, draughts of hot milk or water, chloride of ammonium, iodide of potassium, volatile oils like eucalyptus, menthol, balsam of tolu and Friar's balsam, inhalation of creosote, ipecacuanha, and sal volatile.

These drugs are combined in various ways in bronchitis and other chest conditions, but much skill is needed for their proper administration.

EXPECTORATION means either material brought up from the chest by the air passages, or the act by which it is brought up.

Characters of expectoration. — There may be much cough productive of a very small amount of sputum at the commencement of an acute bronchitis or inflammation of the throat, and it must be remembered that young children and some older persons swallow their expectoration as soon as they have brought it up, instead of spitting it out.

The sputum from the throat in catarrh of this region is usually thick and sticky, speckled with black here and there owing to dust and smoke inhaled and deposited on the throat.

Watery, frothy expectoration is brought up in considerable quantities during the greater part of an attack of acute bronchitis, particularly in old people.

When cavities are present in the

EXTENSION

lungs, their contents are often expectorated as thick, yellow, oily-looking material, with few air-bubbles in it.

Sputum with a 'rusty' tinge, and so sticky that it adheres to the dish into which it is spat, when the latter is turned upside down, is characteristic of pneumonia.

Bright red blood in large quantities may be brought up from the lungs, and then, as a rule, the person has suffered from recognised lung or heart disease for a considerable time, though coughing up of some blood is also occasionally one of the first signs of consumption. On the other hand, it must be remembered that spitting of blood may be due merely to a bleeding at the nose from which the blood has run backward down the throat; or, still more commonly, to the rupture of a small vessel on the wall of the throat in cases where this part of the air passages is inflamed.

Disposal of expectoration is now looked upon as a matter demanding public attention. The habit of spitting on the ground in public places is one which, in view of the dangerous nature of diseased sputum, should never be tolerated. Where spittoons are provided, these should be washed and disinfected every day.

Most consumptives who are able to go about carry with them a pocket flask containing a small quantity of some strong antiseptic (e.g. carbolic acid solution 1 in 20) into which the expectoration is received and by which it is disinfected before it is poured down the drains. For those confined to bed, the use of Japanese paper napkins or other squares of thin paper is to be recommended. One of these is used each time the patient spits, and is then crushed up and laid upon a table by the bedside till the attendant removes and burns it.

EXTENSION is the term applied to the process of straightening or stretching a limb. In cases of fractured limbs, extension is employed during

EYE

the application of splints, in order to reduce the displacement caused by the fracture, and prevent movement of the broken ends of bone. It is effected by gently and steadily pulling upon the part of the limb beyond the fracture. Extension of a more permanent type is used in the after-treatment of some fractures, as well as in diseases of the spine, by placing the patient upon an inclined bed and affixing weights to his lower limbs or to his head by means of adhesive plaster or of straps. A similar procedure is often adopted in tuberculous disease of the knee or hip, to prevent the 'starting pains', which are apt to occur as the affected person is dropping off to sleep.

EXTRACTS are preparations, usually of a semi-solid consistence, containing the active parts of various plants extracted in one of several ways. In the case of some extracts, the juice of the fresh plant is simply pressed out and purified; in the case of others the active principles are dissolved out in water, which is then to a great extent driven off by evaporation; other extracts are similarly made by the help of alcohol, and in some cases ether is the solvent.

EXTRASYSTOLE is a term applied to premature contraction of one or more of the chambers of the heart.

EXTRAVASATION means an escape of fluid from the vessels or passages which ought to contain it.

EXUDATION means the process in which some of the constituents of the blood pass slowly through the walls of the small vessels in the course of inflammation, and also means the accumulation resulting from this process. For example, in pleurisy the solid, rough material deposited on the surface of the lung is an 'exudation'.

EYE.—The eyes are set in two deep four-sided cavities, the orbits, of which the edges are so prominent that the eyeballs are efficiently protected and are therefore seldom in-

EYE DISEASES AND INJURIES

jured by a blow. The space behind each eyeball is filled up by loose fat which supports the ball as on an elastic cushion. The two eyeballs are moved in association with one another, each by six small muscles.

Each eyeball is protected by two eyelids formed of skin, muscle, and supporting cartilage, and the front of the eye and back of the lids are covered by a smooth glistening membrane, the conjunctiva.

Each eye is formed of three coats, and contains from before back the aqueous humour, the lens, and the vitreous humour.

The outer coat, or sclerotic, is composed of dense white fibrous tissue, which gives its appearance to the white of the eye. In front it is clear and transparent, forming the cornea.

The middle or choroid coat contains the blood-vessels that nourish the eye, and appears in front as the iris, a pigmented curtain varying in colour in different eyes, and having in its centre a round black aperture (the pupil), through which light enters. Immediately behind this lies the lens.

The inner coat or retina is the nervous coat in which the optic nerve ends. The point of entrance of the optic nerve at the back of the eye forms a blind spot.

The tears are produced by a lachrymal gland, and are dropped constantly over the front of the eyeball, to be conveyed away by two small lachrymal ducts, one on the edge of each lid, into the side of the nose.

EYE DISEASES AND INJURIES.

—In the following account, some of the simpler and commoner diseases are dealt with. The subjects of CATARACT, CHOROIDITIS, GLAUCOMA, IRITIS, VISION, DEFECTS OF, SQUINTING, and SPECTACLES are dealt with under these headings.

STYE is one of the best known of eye affections, and consists of an inflammation situated round an eye-

EYE DISEASES AND INJURIES

lash, which occurs especially in young people. It begins as a general swelling of the lid accompanied by pain, and gradually suppurates. Very often as one stye subsides another appears. Hot, moist applications, like poultices, relieve pain and hasten on suppuration, otherwise styes are to be treated like boils. (*See BOILS.*) The application for some time of oxide of mercury ointment, with a good deal of rubbing of the lid, helps to prevent new styes from forming.

CHRONIC INFLAMMATION OF THE LIDS, with loss of the eyelashes, known as 'blear eyes', begins with swelling near the edge of the eyelid, usually the upper one, redness and the constant formation of a crust round the roots of the eyelashes. Very often the onset follows one of the acute diseases of childhood, especially measles.

The crusts should be removed from the lids twice a day with warm solution of bicarbonate of soda (a teaspoonful to a tumblerful of water), and ammoniated mercury ointment or yellow oxide of mercury ointment thereafter applied.

CYSTS of the lids often arise and may last for many years, and give no trouble beyond that of irritation and disfigurement caused by their size, if they be large. Massaging the eyelid over the cyst daily with weak nitrate of mercury ointment occasionally brings about its gradual disappearance. It may be removed easily, if desired, by an opening on the back of the lid.

PARALYSIS of the lids may occur from many causes, producing a drooping of the upper lid known as 'ptosis'.

SPASM of the lid is sometimes a troublesome condition, either in the form of frequent fluttering of the lid, popularly called 'life' in the eyelid, or there may be a partial closure of the eye, which will not relax. The cause is often to be found as some source of irritation about the face like a decayed tooth, or wax in the

EYE DISEASES AND INJURIES

ear, and, the irritation being removed, the spasm disappears.

NYSTAGMUS, or indefinite tremor of the eyeballs, is a symptom of many nervous disorders, and is frequently observed also in persons who have had bad eyesight from childhood, and in miners.

WATERY EYE, or **EPIPHORA**, in which the tears overflow on to the face, is a slight but very annoying trouble. It may result from some interference with the ducts which should convey the tears away to the lower part of the nose. Sometimes in old people with flabby eyelids, or in cases where there is a contracting scar on the face, the lower eyelid turns outwards so that the lachrymal puncture is drawn away from the eye and the tears cannot enter it, but collect in the hollow of the lid, and then run over the face. Where the cause is due to conjunctival irritation, a mild astringent lotion, *e.g.* tannic acid in the strength of 2 to 5 grs. to the ounce of water, may be employed.

CONJUNCTIVITIS, or inflammation of the conjunctiva, is a very common eye affection. Not in itself a serious condition, it may yet give rise to grave complications, as, for instance, ulceration of the cornea, leading to haziness of vision or even loss of sight.

A chronic state of redness or congestion of the eye, hardly amounting to conjunctivitis, is common in people whose eyes are much exposed to irritation from dust, smoke, cold winds, etc. Even the strain upon the eyesight due to errors of refraction may cause the eyes to appear reddened and tender. Cold in the head is very often associated with congestion of the conjunctiva. In some infectious diseases, and notably in measles, conjunctivitis is a well-recognised symptom.

Varieties of conjunctivitis.—In addition to the type of *simple acute conjunctivitis* there are various more severe forms.

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A very severe type of conjunctivitis, *ophthalmia of the new-born* or *ophthalmia neonatorum*, may attack children a few days after birth. It is due to infection with discharges from the maternal passages, and may be attended with very severe corneal ulceration, thereby destroying or doing great permanent harm to the eyesight. This disease has been held responsible for about one-fifth of all cases of blindness in young persons. It was at one time a terrible scourge in Maternity Hospitals, but is now much less common.

Trachoma, or *granular conjunctivitis* (Egyptian ophthalmia), is a chronic, persistent, and severe form of conjunctivitis very common in the East and in many European countries. It is characterised by the appearance of nodules, pale in colour, and often compared to boiled sago grains, situated on the conjunctiva lining the lids. In Great Britain the disease is rarely met with except among the alien population of large towns, Jews, Poles, etc. The disease is so serious and difficult to cure that in many civilised communities vigorous attempts are being made to check its spread among the population. No emigrant is allowed to enter the United States, Canada, or Australia, if his eyes are affected by this disease.

Strumous conjunctivitis is a common form, seen usually in weakly, ill-nourished children. Very commonly the disease involves the cornea, producing ulceration and very great irritation and shrinking from light.

Treatment of conjunctivitis.—In simple cases all that is needed is to keep the eyes clean by frequent bathing with a mild antiseptic lotion, *e.g.* boracic lotion or zinc sulphate lotion (2 grains to each ounce of distilled water). The bathing is best done by pledgets of cotton-wool, which can be burned after use. A special small flask known as an 'undine' with a long nozzle may be used to direct a stream of lotion over the

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eyeball. A mild antiseptic ointment, e.g. boracic or zinc ointment, should be smeared on the lid margins to prevent gumming of the lids. Bandaging the eye is not good treatment, as it prevents the escape of discharges from the eye, and thus encourages the growth of organisms. Similarly poultices of bread, porridge, etc., so often employed as a household remedy for inflamed eyes, may do great harm. The eyes may, however, be protected from light and draught by an eye-shade, which at the same time allows access of air.

In *severe cases* of conjunctivitis, and especially in the stage when the secretion is becoming purulent, the use of silver salts as astringents and anti-septics is of the greatest value.

Trachoma is best treated by the application of a strong astringent, such as bluestone (sulphate of copper), to the inner surfaces of the lids.

In *strumous conjunctivitis* the best treatment is the daily application of a 1 per cent ointment of yellow oxide of mercury. In using the ointment a piece about as large as a small grain of barley should be laid gently within the lower lid margin, and then the eye being closed the lid should be gently massaged so as to rub the ointment over the whole eye. Fresh air, sunlight, and the strictest attention to cleanliness are of the greatest importance. Many children with this affection suffer from nasal catarrh and overgrowth of the tonsils and adenoid tissue of the naso-pharynx. Proper treatment of these affections will do much to improve the general health and expedite the cure of the ocular troubles. (See NOSE DISEASES.)

KERATITIS, or INFLAMMATION OF THE CORNEA, is due to several causes. It is often a manifestation of inherited syphilis, and comes on between the ages of seven and twenty years. In later life it is sometimes an accompaniment of rheumatic manifestations in other parts of the body, associated with septic absorption from the teeth,

EYE DISEASES AND INJURIES

alimentary canal, or other sites of chronic infection and suppuration. The cornea gets dull and hazy, the sight being a good deal interfered with, and at the same time there are pain and intolerance of light. This disorder lasts usually four to six months, or longer, both eyes being affected, and it is almost always accompanied by iritis, which renders it still more serious.

ULCER of the cornea arises from various causes, several of which have been mentioned. Two chief dangers attend an ulcer here, one being the fact that a white scar, which interferes with vision, especially if the ulcer has been severe, is certain to follow the ulcer; the other danger being that of perforation of the cornea.

BLACK-EYE is an effusion of blood under the loose skin over and round the lids, due to a blow. Within the first few hours of a blow on the eye, much may be done to diminish the blackness by a pad of linen wrung out of cold water, or of Goulard's water, and tightly bound on by a handkerchief passing round the head. A time-honoured pad is a raw beef-steak, which is moist and cold. After the first day absorption may be hastened by gentle massage and the bruise may be made less apparent by the application of flesh-coloured grease paint.

WOUNDS OF THE EYE.—The eyebrow, cheek, nose, and even the eyelids are often wounded, but seldom the eye itself, on account of the efficient protection afforded to it by these parts. The danger of a wound to the eye consists, not so much in the wounding of any important structure, which will heal with great rapidity, as in the introduction of organisms which may set up inflammation. The most dangerous position for a wound is in the ciliary region or iris, that is just outside the margin of the cornea, from whence a destructive inflammation not only of the wounded eye, but also of the other, causing total blindness, is apt to be set up. (See IRITIS.)

EYE DISEASES AND INJURIES

Metallic particles which penetrate the eye should always, if possible, be removed, because the fluids of the eye act upon them to form irritating chemical compounds. Most eye hospitals are provided with a powerful electro-magnet, which will draw small particles of iron or steel from the deeper part of the eye into the anterior chamber, where they can be seen by the operator and successfully removed. Cinders or dust may lodge behind one of the lids or may be embedded in the cornea and cause much pain. In this case the eye should not be rubbed, but a handkerchief may be gently pressed against it. The lids should be drawn gently apart, and if the body be seen it should be wiped off the eye with a wet camel-hair brush or clean wet rag. If it cannot be seen the eyelids should be turned outwards and the inner surface of each lid examined. The lower lid is simply pulled downwards. To examine the upper

EYE STRAIN

lid, the person is told to look steadily downwards, a flat pencil, or paper-knife, or penholder, is laid horizontally along the centre of the lid, and the lid, being grasped by the eyelashes between the finger and the thumb of the person who is looking for the foreign body, is gently and quite painlessly folded upwards over the pencil, etc. The irritating body is then brushed away, and the lid turned down again. If a piece of lime has got upon the eye it should be sponged with vinegar and water, and if acid has got into the eye it should be copiously bathed with baking soda in water.

FLOATING SPECKS which become visible when the gaze is directed towards a white surface or bright light are caused by minute opacities in the fluid contents of the eyeball. They are found in almost every eye, and are of no importance.

EYE STRAIN (*see* VISION, DISORDERS OF).

F

FACE.—The face is that part of the head extending from the eyebrows to the chin. It is supported by fourteen bones, and the general character of the features depends chiefly upon the presence of air spaces in the bones immediately behind the eyebrows and in the upper jaw-bones. The varying expressions connected with the emotions and the general expression denoting character are chiefly due to the action of numerous thin muscles situated round the openings of the eyes, nose, and mouth. Sensation in the face depends upon the fifth nerve, which divides into three portions, having a long course through bony canals where they are liable to pressure with resulting neuralgia. The muscles of expression are thrown into action by the seventh nerve, which enters the face immediately below the ear; here it is liable to injury by blows, cold, etc., with resulting facial paralysis on one side.

The chief skin disorders that affect the face are pimples about the chin (*see* ACNE), ringworm and barber's itch (*see* RINGWORM), the form of tuberculous disease known as lupus (*see* LUPUS), wens (*see* WENS), and birth-marks. Cancer is not uncommon in later life about the lips, and the face is one of the commonest sites of the slow-growing form of cancer known as rodent ulcer.

FACIAL NERVE is the seventh cranial nerve, and supplies the muscles of expression in the face, being purely a motor nerve.

FÆCES is another name for the stools. (*See* CONSTIPATION, DIARRHŒA, STOOLS.)

FAINTING, or **SYNCOPE**, is a temporary loss of consciousness associated with feeble action of the heart.

Symptoms are well known. There are certain warning symptoms, such as pallor, feebleness of the pulse, a sinking feeling, and a dullness of sight and hearing. When the faint has

occurred, the person lies still, breathing very faintly, with feeble pulse, pallid complexion, and often perspiration standing in drops on the face.

The faint, as a rule, lasts only a few seconds or minutes, but it may last for hours, and hysterical persons may pass from one faint, only to fall into another, several times.

Treatment.—The faint may often be prevented by attending to the warning symptoms mentioned above. Sitting down and bending forwards so as to bring the head on a level with the knees, or taking rapid gulps of cold water, often is enough to prevent a threatened faint. The person in a faint should be laid flat on the back, and care should be taken that breathing is unimpeded. If care be not taken to leave the fainting person lying flat, death may ensue, but if this be attended to, nothing more is usually necessary. Stimulants may be applied to the skin in the form of cold compresses on the head, slapping of the hands, pinching of the cheeks; or to the nose in the form of smelling-salts or the pungent fumes of burnt feathers. After recovery has taken place from the faint the tendency to its recurrence may be prevented by administration of some stimulant such as sal volatile or brandy.

FALLING SICKNESS is an old name for epilepsy. (*See* EPILEPSY.)

FALLOPIAN TUBES are tubes, one on each side, which are attached at one end to the womb, and have the other unattached but lying close to the ovary.

FALSE MEMBRANE is the name given to the deposit which forms upon the walls of the air passages in cases of diphtheria.

FARADISM (*see* ELECTRICITY IN MEDICINE).

FARCY is another name for glanders. (*See* GLANDERS.)

FARINACEOUS FOODS are those

FASCIA

derived from cereals. The chief are wheat, oats, barley, rye, maize, rice, and millet. Along with them are often included tapioca, sago, and arrowroot, which, however, are simply forms of starch, derived, the first from the cassava plant, the second from the pith of the sago palm, and the third from the root of a West Indian plant. Pease-meal and lentil flour are also popularly reckoned as farinaceous foods, though they are derived from pulses, and differ from the former in containing double the amount of the protein contained in the cereal foods. Semolina, farola, macaroni, and vermicelli are true farinaceous foods, being all preparations of wheat.

Bread is the most important farinaceous food (*see* BREAD), but oatmeal when well boiled forms an excellent food for children, because it contains much more fat and more protein (building material) than wheat flour. Rice is a form of cereal food which is very easily digested and therefore specially suitable for invalids.

Peas and lentils contain about double the amount of protein that the cereals proper possess, and may, therefore, in persons of good digestion, replace meat to a large extent; but they are not satisfactory foods for children or persons with stomach complaints because of their difficulty of digestion.

FASCIA is the name applied to sheets or bands of fibrous tissue which enclose and connect the muscles.

FASTING means the abstention from, or deprivation of, food and drink sufficient to supply the waste resulting from the bodily activity and to maintain the body temperature.

The practice, which some persons carry out, of fasting one day a week or even of changing to a light diet at stated intervals, in the interests of health or of religion, is highly commendable, because it gives the digestive organs a periodic rest.

After prolonged fasting the return to food should be gradual, and no

FATIGUE

heavy meal should be taken for a day or two.

FAT as a food has more energy-producing power weight for weight than any other food. Fat when taken to a large extent in the diet requires to be combined with a certain proportion of either carbohydrate (starchy and sugary food) or protein (meat food) in order that it may be completely consumed, otherwise harmful products, known as ketones, are apt to be formed in the blood.

For treatment of excess of body fat *see* CORPULENCE.

FATIGUE is a question which has attracted a considerable amount of attention lately, both in its relation to the output of work under industrial conditions, and also in relation to the study of school children.

Industrial workers.—The fat necessary for the diet is usually obtained naturally as a part of meat, milk, eggs, and other articles. It is found not only in such animal foods, but can also be derived from vegetable sources, such as margarine, used as a substitute for butter, olive oil, and nuts. For children, these vegetable fats are not so satisfactory as the animal fats, because although of equal nutritive value, they are lacking in the vitamins necessary for growth. For different individuals and different industries there is a varying ideal of the period through which the most effective work is done, and this is a matter for investigation and research, which has recently been carried out in Great Britain by an Industrial Fatigue Research Board. It has been found that during rest, much more benefit is obtained by a certain amount of movement than by complete stillness; also that during the course of work changes of posture, which lead to the use of different muscles, are of great importance.

The shortening of unduly long hours of labour under improved hygienic conditions is followed by increased productive efficiency. During night

FAUCES

work productive efficiency is much less than during the day. Unfavourable influences in regard to temperature, moisture, and lighting have a considerable effect on the production of fatigue, and these can be controlled by means of better ventilation and illumination. In occupations demanding continuous attention, working periods should not exceed three hours, and in arduous work frequent rest periods should be provided.

Children are especially liable to suffer from over-pressure at work. This applies especially to children of nervous temperament, those who are anæmic or badly fed, those who are rapidly growing, and those who have too little sleep and recreation or have various physical defects in sight, hearing, etc. The time devoted to a lesson in any particular subject should not exceed three-quarters of an hour, and there should be an appropriate variation of subjects, sufficient intervals for rest, recreation, physical exercise, and food.

FAUCES is the name given to the somewhat narrowed opening between the mouth and throat.

FAVUS is another name for honeycomb ringworm. (See RINGWORM.)

FEBRICULA means a little fever. The term is applied to the transitory rise of temperature, lasting from a few hours to a few days, which accompanies the onset of a cold or chill.

FEBRIFUGES, or antipyretics, are remedies employed to reduce the temperature of the body when it has been raised above that found in health. (See BATHS and FEVER.) In addition to the application of cold some of the chief febrifuges are aconite, alcohol, antipyrine, quinine, salicin, and salicylate of soda. (See also under each of these headings.)

FEEBLE-MINDEDNESS (see MENTAL DEFECTIVENESS).

FEEDING (see DIET and INFANT-FEEDING).

FEVER

FEMALE DISEASES (see MENSTRUATION; OVARIES, DISEASES OF; PREGNANCY; and UTERUS, DISEASES OF).

FEMUR is the bone of the thigh, and is the longest and strongest bone in the body.

FENNEL is a seed-like fruit used as a stimulant and to check spasms. It contains a volatile oil and is used in the form of fennel water in doses of one or more tablespoonfuls.

FERMENTS are substances which produce chemical changes in other bodies while remaining unchanged themselves.

FERN-ROOT is a remedy used for the expulsion of tapeworms. An ethereal extract is made from the root of the common male fern. It is taken in the following manner. After the person who harbours the tapeworm has taken a dose of castor oil in the morning, he subsists for a day upon small quantities of milk to starve the worm. He then at night takes one dram (a teaspoonful) of the extract of male fern in milk upon an empty stomach, and follows this by a second dose of castor oil or salts the following morning. The worm is often expelled entire and dead.

FERRUM is the Latin name for iron.

FESTER is a popular term used to mean any collection or formation of pus. It is applied to both abscesses and ulcers. (See ABSCESS, ULCER, WHITLOW.)

FEVER may be defined as a condition of the body characterised by an increase in temperature. Fever is one of the most common accompaniments of diseases in general, and serves to make the distinction between *febrile* and *non-febrile* ailments.

Treatment.—With respect to the treatment of fever in general, the chief remedies are the external application of cold, and the administration of antipyretics or febrifuges. Cold is applied by sponging at intervals, by the tepid bath, or by the wet pack. (See BATHS and WET PACK.)

FIBRILLATION

Certain drugs possess the power of reducing the heat of fever, and are now largely employed for this purpose. The most important of these is quinine, which, when administered in large doses (10-30 grains), has a marked effect in lowering the febrile temperature, and, if repeated, of keeping it down. Many other substances are used for their antipyretic action, among which may be mentioned salicin, salicylate of soda, phenacetin, antipyrine, etc. Alcohol is strongly recommended by some physicians for this purpose.

FIBRILLATION is a term applied to rapid contraction or tremor of muscles, especially to a form of abnormal action of the heart muscle in which individual bundles of fibres take up independent action.

FIBRIN is a substance formed in the blood as it clots. Its formation indeed causes the clotting.

FIBROID is a term sometimes applied to tumors of the womb, consisting partly of muscular and partly of fibrous tissue. (*See* UTERUS, DISEASES OF.)

FIBROMA is a tumor consisting of fibrous tissue.

FIBROSITIS is another name for muscular rheumatism. (*See* RHEUMATISM.)

FIBULA is the slender bone upon the outer side of the leg.

FINGERS consist of three bones called 'phalanges' united by hinge-joints and strong ligaments. The thumb, like the great toe, differs from the others in having only two bones. These are bent and straightened by powerful sinews, two in front and two behind, which are brought into action by the contraction of muscles in the forearm.

The fingers are subject to the same diseases as skin and bone in other parts of the body. The disease to which the fingers are specially liable is abscess, following upon some injury, either about the root of the nail, or deeply situated in connection with

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the sheaths of the sinews. (*See* WHITLOW.)

FISSURE is a term applied both to clefts of normal anatomical structure and also to small narrow ulcers occurring in skin and mucous membrane. The latter type of fissure occurs especially at the corners of the mouth and at the anus. (*See* LIPS, and RECTUM, DISEASES OF.)

FISTULA is an unnatural, narrow channel, leading from some natural cavity, such as the interior of the bowels, to the surface. Or, it may be a communication between two such cavities, where none should exist, as, for example, a direct communication between the bladder and bowel. Fistula at the anus is apt to be a form of tuberculosis.

FIT is a popular name for a sudden convulsive seizure, though the term is also extended to include sudden seizures of every sort. During the occurrence of a fit of any sort the chief object should be to prevent the patient from doing any harm to himself by the convulsive movements, so that the person should be laid flat, and the head supported on a pillow or other soft material. To prevent the tongue from being bitten, some smooth object, such as the handle of a tooth-brush or of a knife, may be placed between the teeth. (*See* APOPLEXY, CONVULSIONS, ECLAMPSIA, EPILEPSY, FAINTING, HYSTERIA, URÆMIA.)

FLAT-FOOT is a deformity of the foot in which its arch sinks down so that the inner edge of the foot comes to rest upon the ground.

Symptoms.—There is pain both along the instep and beneath the outer ankle, the foot is stiff and broad, walking is tiresome, and the toes turn far out. The footprints of a flat-foot are broad, all the way from toe to heel, instead of being a mere line at the instep. The extent to which the flatness has proceeded may be tested by wetting the bare feet with ink water and causing the

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person to stand on a piece of clean white paper.

Treatment.—Change of occupation to one which allows of sitting is necessary. In early cases the leg muscles may be strengthened by tiptoe exercises performed for ten minutes night and morning, the legs being thereafter bathed with cold salt water and massaged. This may be enough, or a steel sole, with in-step to support the arch, may have to be worn inside the boot. In other cases providing the boot with a sole, which is thicker on the inner side of the foot by $\frac{1}{4}$ to $\frac{1}{2}$ an inch than it is on the outer side, may both relieve discomfort in walking, and help to remedy the flat foot by throwing the weight of the body on to the outer edge of the foot. The toes should be habitually turned inwards in walking. In very bad cases of long standing, it may be necessary either to wrench the foot into position under chloroform, and put it in plaster of Paris for a month, or even to remove part of the bone from its inner side, so as to shorten the instep, and make a new arch.

FLATULENCE means a collection of gas in the stomach or bowels. In the former case the gas is expelled from time to time in noisy eructations by the mouth; in the latter case it may produce unpleasant rumblings in the bowels, or be expelled from the anus.

Treatment.—Flatulence in the stomach is treated by relieving the dyspepsia which causes it. If the flatulence is due to or aggravated by the habit of swallowing air, the patient must, by taking a careful note of the occasions when he does this almost unconsciously, break himself of this bad habit. When this is done the flatulence often passes off. A useful remedy for expelling flatulence is compound cinnamon powder, taken in doses ranging from 10 grains to a small teaspoonful. In cases of intestinal flatulence, articles of diet

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which tend to produce gas, *e.g.* green vegetables and starchy foods, should be avoided, and the food should be light and quickly digestible.

FLEXION means bending, and is a term applied either to the bending of joints, or to an abnormal shape of organs. Anteflexion and retroflexion of the womb mean its bending forward and backward respectively.

FLIES (*see* INSECTS IN RELATION TO DISEASE).

FLOATING KIDNEY (*see* KIDNEY, DISEASES OF).

FLOODING is a popular name for an excessive blood-stained discharge from the womb at or between the menstrual periods. (*See* MENSTRUATION.) In the majority of cases, flooding is the sign of a miscarriage. (*See* MISCARRIAGE.)

FLUX means an excessive discharge from any of the natural openings of the body. 'Bloody flux' is a popular name for dysentery, 'white flux' or 'whites' for leucorrhœa.

FÆTUS, or **EMBRYO**, is the name given to the child while still within the womb.

FOLIA is a Latin term for leaves, *e.g.* *digitalis folia*.

FOLLICLE is the term applied to a very small sac or gland, *e.g.* small collections of adenoid tissue in the throat.

FOMENTATION is the term applied to any warm application to the surface of the body in the form of a cloth. Usually the fomentation cloth is heated by being wrung out of hot water, but the term is also applied to dry applications and to hot cloths upon which various drugs are sprinkled. A fomentation dilates the blood-vessels of the part to which it is applied and has a soothing effect upon the endings of the nerves, so that it both aids the absorption of effusions and relieves pain. In the case of superficial abscesses, it softens the skin and helps the abscess to 'point'.

Method of preparation.—HOT MOIST FOMENTATIONS are made as follows.

FOMENTATION

The requisites are a piece of flannel sufficiently large when folded double to cover the part to which it is desired to apply heat, a towel, a basin, a kettle of boiling water, a piece of jaconette slightly larger than the fomentation, a layer of cotton-wool to cover the fomentation, and a binder with safety pins. The towel is placed open across the basin; the fomentation flannel is laid upon the towel and pressed down into the basin; boiling water is then poured from the kettle upon the fomentation cloth until it is well soaked; the ends of the towel are then twisted firmly in opposite directions by the hands holding its dry ends; and the hot water is thus squeezed out of the fomentation cloth. The towel is now untwisted, the fomentation cloth is shaken out flat, so as to admit air between its folds, and laid upon the jaconette, which in turn is laid on the layer of cotton-wool. The whole is now laid upon the body with the fomentation cloth against the skin, and is fixed in place with the binder and safety pins. The preparation of the fomentation should be carried out at the bedside, so that it does not unduly cool before being applied. If the fomentation is large, it may be found more convenient to use a roller towel and to twist it up by passing a couple of sticks through each end. Instead of the cotton-wool and binder a large bath towel may be used to keep the fomentation in contact with the body. The fomentation retains its heat only a short time, and, if it is to be renewed, this should be done about every twenty minutes.

TURPENTINE FOMENTATION.—This is also known as a 'stupe'. It is prepared in the same way as the hot fomentation, but, in addition, after the boiling water is poured on the cloth and before it is wrung out, a few teaspoonfuls of turpentine are sprinkled on the cloth.

LAUDANUM FOMENTATION.—This may be prepared in the same way as the hot fomentation with the addition

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that, after the cloth is wrung out and just before the fomentation is applied, two or three teaspoonfuls of laudanum are sprinkled over its surface.

BORIC ACID FOMENTATION.—A fomentation of boric acid is employed to allay inflammation in the case of open wounds, abscesses, or ulcers. For this purpose a double piece of lint is used instead of the flannel fomentation cloth. This is dipped into a warm saturated solution of boric acid, wrung out, and applied, after which it is covered with a piece of jaconette and cotton-wool and bandaged in place. Boric lint ready prepared may be used instead of plain lint, and all that is necessary then is to pour boiling water over it, wring it out, and apply in the same manner as the ordinary fomentation.

COLD-WATER DRESSINGS are sometimes also known as fomentations because they become gradually warmed by the heat of the body. They are prepared by dipping a piece of lint in saturated boric acid lotion or other weak antiseptic, applying to the part, and then covering with a piece of gutta-percha tissue or oiled silk which is larger than the piece of lint and projects at least half an inch beyond it all round.

DRY FOMENTATION.—This is made by toasting a piece of thick flannel in front of the fire and laying it on the part to be fomented, covering with a thick layer of cotton-wool and on the outside a hot-water bag. This does not retain its heat for long, but the heat is longer retained by a flannel bag containing salt or bran which is warmed and applied in a similar manner.

FOMITES is a term used to include all articles which have been brought into sufficiently close contact with a person sick of some infectious disease to retain the infective material and spread the disease.

FONTANELLE is a term applied to areas on the head of a young child, in which bone has not yet formed.

FOOD

FOOD is a subject of great importance, both because numerous diseases are apt to arise from food materials that have been contaminated, and still more because food that is badly prepared, or that is defective in quality, or that is too great in quantity, is productive of general bad health. Numerous regulations have been introduced in recent years with the object of ensuring the purity and quality of meat, milk, bread, and other important foods.

Details in regard to the kind of food suitable in various conditions are given under the headings **DIET** and **INFANT-FEEDING**. Further information in regard to important kinds of food is to be found under the headings, **BREAD**, **MILK**, **MEAT**, **FAT**, **FRUIT**, **FARINACEOUS FOODS**, and **CANNED FOOD**.

The preparation of specially light foods sometimes required for invalids is given under the headings **ALBUMIN WATER**, **BARLEY WATER**, **BEEF ESSENCE**, **BEEF TEA**, **GRUEL**, **RICE WATER**, and **PEPTONISED FOODS**; and the importance of including in the diet a certain amount of fresh food is given under **VITAMINS**.

FOOT is that portion of the lower limb situated below the ankle-joint. Its structure is very similar to that of the hand.

For diseases of the foot see **CORNS** and **BUNIONS**; **CHILBLAINS**; **BONES**, **DISEASES OF**; **GOUT**; **NAILS**; **CHAFING OF THE SKIN**; **DROP-FOOT**; **CLUB-FOOT**.

FOOT-SORENESS (see **CHAFING OF THE SKIN**).

FORAMEN is the term applied to natural openings in bones, such as the foramen magnum, the large opening in the base of the skull through which the brain and spinal cord are continuous.

FORMALIN, or **FORMIC ALDEHYDE**, is a powerful gaseous antiseptic, and has also the power of hardening the tissues. The vapour is very irritating to the eyes and nose.

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For disinfection it is largely used in the form of a spray of 2 to 10 per cent strength in water. This can be sprayed through the air and on the walls, furniture, etc., of a room to be disinfected, being free from destructive properties to metal-work, curtains, carpet, etc. It can also be vaporised by heat. In 1 per cent solution in water, it forms a powerful antiseptic for hand-washing, and has the merit of being non-poisonous in small amounts. 'Formamint' lozenges are useful for inflammation of the throat.

FORMIC ACID, a substance originally introduced into medicine because of its presence in the bodies of ants, which possess enormous muscular power, is used as a muscle and nerve tonic. It has been given with success in cases of cardiac weakness and of various tremors.

FOSSA is a term applied to various depressions or holes, both on the surface of the body and in internal parts, such as the iliac fossa in each lower corner of the abdomen.

FOWLER'S SOLUTION is another name for **LIQUOR ARSENICALIS**, which contains arsenic and is coloured red with tincture of lavender. The dose is 2 to 8 drops.

FOXGLOVE (see **DIGITALIS**).

FRACTURES are breaks of bone.

SIMPLE FRACTURES form the commonest variety, consisting of those in which the bone is broken, with or without much laceration of the surrounding parts, but in which there is no wound leading from the fracture through the skin.

COMPOUND FRACTURES are those in which the skin is injured, so that a wound leads from the outer air to the broken bone, which may indeed protrude through this wound. The fact that a fracture is compound renders it very much more serious, even though there is little splintering of the bone or laceration of the soft tissues.

INCOMPLETE FRACTURES are those in which the bone is broken only

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partly across, or in which the periosteum, the tough membrane surrounding the bone, is not torn. This variety occurs in children, whose bones are tougher and more pliant in earlier life. A child's bone may, like a twig, crack half-way across and then split some distance up its length, suffering in this way what is called a 'green-stick' fracture.

FISSURED FRACTURES are mere cracks in the bone, and a simple fissured fracture is a fairly frequent accident.

DEPRESSED FRACTURES occur generally on the skull, and consist of fractures in which a fragment of bone is forced inwards below the general level. This may give rise to interference with the brain either when the fracture is produced, or at a later date from thickening consequent on repair of the bone.

COMPLICATED FRACTURES are those in which, in addition to the fracture, some other serious injury is produced, e.g. a dislocation, tearing of a nerve, etc.

COMMINUTED FRACTURES are those in which there is much splintering.

IMPACTED FRACTURES are those in which, after the break has occurred, one fragment is jammed inside the other, usually at an angle.

UNUNITED FRACTURES are those in which, after the time has elapsed in which the fracture usually mends, it is found that union has not taken place.

MALUNITED FRACTURES are those which have not been properly set, or in which displacement occurs after setting, so that the bone is twisted, or united with a neighbouring bone, as sometimes happens after fracture of the forearm, or is enlarged and shortened, or does not unite by bone, but forms what is known as a 'false-joint'. Sometimes malunion is unavoidable, owing to spasm of muscles or to production of an excessive amount of new bone.

Symptoms and signs.—*Uselessness of the part* is the main symptom, if the

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fracture affects a limb. If the lower limb be affected, it is useless for support; if the upper limb, the part beyond the fracture cannot be raised. *Pain* is a variable sign. So long as the affected part remains at rest, it is generally slight; movement is, however, apt to be painful. In fracture of the ribs, the moderate movements of tranquil respiration are free from pain, while a deep breath or squeezing of the chest causes considerable pain. *The sound of a crack* is sometimes heard, or the sensation of something giving way may be experienced by the injured person at the moment of the accident, but this is not a reliable symptom, because it occurs also when a muscle or sinew is torn. *Deformity* is found at the site of fracture. There is *shortening* of the limb in consequence of contraction of the muscles which pass over the fracture. There is also *swelling*, partly owing to the overlapping of the ends of the bone, partly in consequence of the blood and lymph which are at once poured out from the torn vessels around the injury. *Unnatural mobility* is also found, the limb giving way at a point where it should be rigid. *Crepitus* or grating is the final and only certain sign of fracture, experienced when the ends are rubbed together. It should never be felt for except by skilled hands, since much damage can be done by the sharp broken ends of bone to surrounding structures. *X-ray examination* is very useful both for showing the break and the position of the fragments.

Treatment.—After the fracture has been recognised, a certain amount of temporary treatment is advisable till the broken bone can be properly fixed in place by a surgeon, and in the following descriptions the temporary treatment will be given, short reference being made to the permanent treatment where it differs from the temporary.

For temporary treatment splints,

etc., may be applied above the clothes, and little padding is then necessary. In the permanent treatment the limb is bared, and the splints padded with wool.

For permanent treatment, the fracture must first of all be 'reduced', *i.e.* the broken ends must be brought accurately together; then it must be 'set', *i.e.* the ends firmly fixed in good position; and finally it must be kept at rest, with attention to the patient's general health, till union has taken place. For permanent fixation of a bad fracture the surgeon sometimes unites the broken ends with silver wire or metal plates.

Splints are generally made from strips of wood, about $\frac{1}{4}$ -inch thick, but they may be improvised from bundles of twigs, broom-handles, folded-up newspapers, and many other rigid articles. Care must be taken, especially in old people confined to bed for a fracture, that no bed sores form, and various tonics are often necessary. In the case of fracture of the lower limbs, it is a general practice to keep the person in bed with the limb fixed by ordinary splints for two or three weeks, and then to apply a case of plaster of Paris to the whole limb, and allow the patient to get up and go about with crutches.

COLLAR-BONE.—This bone is apt to be fractured by falls on the hand, or by blows or falls on the point of the shoulder. When it is broken the shoulder droops downwards and forwards. On account of the shortness of the bone, splints are useless, and the deformity is remedied by bandages. These are applied in many different ways, of which the following is one of the simplest. A pad of cloth or wool, the size of the fist, is first placed high up in the armpit, and the elbow is bent so that the arm lies across the chest. An unfolded triangular bandage is then placed on the chest with one end over the sound shoulder, the base running

down over the elbow of the injured arm, and the point of the bandage lying on the front of the chest. The other end, which is hanging down, is brought up behind the elbow of the injured arm, carried up across the back, and tied as tightly as possible to the first-mentioned end behind the neck. The point of the bandage hanging loose beneath the wrist is folded up round the wrist and pinned to the bandage above it. Finally, a triangular bandage, folded narrow, is carried round the chest and elbow of the injured arm and tied tightly, thus levering the shoulder outwards round the pad in the armpit. After this bandage is applied, there is a special necessity to feel that the pulse is not stopped by its tightness.

The fractured bone is fairly strong in four weeks, though the arm has to be used with caution for some time.

UPPER ARM.—This fracture is usually due to a direct blow, and is easily recognised. For setting, two splints, 2 to 3 inches wide, and long enough to reach, the one from the armpit, the other from the shoulder, to beneath the elbow, are taken and well padded. The forearm being laid across the chest, one splint is applied to the front of, the other behind the upper arm, and fixed by two ties, the first above, the second below the site of fracture. A narrow sling is then applied to support the wrist.

This fracture takes six or eight weeks to mend. The permanent treatment is similar, and the elbow is often fixed by means of an L-shaped splint.

FRACTURES NEAR ELBOW.—These all cause great swelling as they implicate the joint more or less, and it is usually very difficult to recognise the precise nature of the injury without an X-ray examination. The temporary treatment of all is the same. An L-shaped splint 3 inches wide, and resembling a mason's 'square', is used, one limb being long enough to reach from the tips of the fingers

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to the elbow, the other from the elbow to the armpit. It is fastened to the inside of the arm and forearm by one tie round the hand and round the forearm, and one round the upper arm. A broad sling is applied to support the forearm.

When the swelling round the joint is great, the treatment is often commenced by applying an elastic webbing bandage for two or three days, from the hand up to beyond the elbow, in order to lessen the swelling.

All fractures round the joint are apt to cause some permanent stiffness, and in order to lessen the risk of this, the splints are taken off every few days, and the joint is cautiously moved, in order to prevent adhesions forming.

FOREARM.—One or both bones may be broken by a blow or fall, and the condition is easily recognised. For treatment the forearm is laid across the chest with the thumb upwards. Two splints at least 4 inches wide, and long enough to reach from the elbow to beyond the tips of the fingers, are well padded (especially down the centre), and placed one behind and one in front of the forearm. The splints are fixed by one tie round the hand and wrist, and another above the fracture.

A rectangular splint, similar to that used for fractures about the elbow, is applied to prevent movement at this joint, though not absolutely essential in the temporary treatment, and finally a broad sling to support the forearm. This fracture mends in about 6 or 8 weeks.

WRIST.—Fracture of the radius close to the wrist, known as 'Colles's fracture', is a common result of a fall on the palm of the hand. The forearm and hand present a peculiar 'dinner-fork' bend, in consequence of the lower fragment turning upwards and backwards. The temporary treatment is similar to that for fractures of the forearm higher up. For permanent treatment, shorter

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splints coming only to the wrist are used, so that the hand may hang downward and by its weight remedy the distortion. Also the splint along the back of the forearm is specially padded at its lower end, that one running down the front of the forearm being specially padded in its upper two-thirds.

The danger of stiffness, after union has taken place, is even greater here than in fractures near the elbow, and is prevented by similar means.

HAND AND FINGERS.—A splint is laid along the palm reaching from the tips of the fingers to the elbow, and the hand and forearm are bandaged to it, or the fist is closed on a thick pad and tightly bandaged in this position. A sling is then applied. The fingers mend quickly.

THIGH.—In all fractures of the upper limb the person is usually allowed to go about while he is wearing the splints, but in all fractures of the lower limb he lies in bed. Fracture of the neck of the thigh-bone is a specially common accident in old people, following upon falls on stairs or ice, but in the young this strong bone is broken only by great violence. There are complete inability to move the limb, shortening amounting to 2 or 3 inches on comparison with the other limb, and rotation outwards of the foot. For treatment a long splint, reaching from the armpit down to below the foot, is laid along the side, and shorter splints may be applied at the fracture, but are not essential for treatment. The long splint, if no regular splint be procurable, may be easily improvised from a broom-handle, or plank. These splints are fixed by the following ties. One broad band, for example a bolster case, round the chest, with or without a narrow-folded bandage round the hips; two ties round the thigh, one above and one below the fracture; two narrow ties round the leg below the knee. Finally, the feet are tied together.

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The thigh-bone takes ten or twelve or more weeks to heal, and, in old people, complete bony union often does not take place, so that permanent lameness may result. In old people also, the confinement to bed for several months, with the old person lying on the back, is apt to bring on bronchitis and congestion of the lungs, and the attempt to unite the bone must often be abandoned as dangerous to life.

KNEE-CAP.—This bone is seldom fractured. A long splint is laid along the back of the limb and fixed by ties to thigh and leg. The fragments of the knee-cap may be fixed together by a bandage passing round above the knee-cap, crossing behind the joint, and then passing round below the knee-cap.

It is extremely difficult to get good bony union, and for the permanent treatment most surgeons prefer to cut in to the fracture and unite the fragments with silver wire.

LEG.—There is particular need for care in the handling of this fracture, because the tibia, or shin-bone, which lies in its whole length just beneath the skin, usually breaks with a sharp-pointed end, like a pen-nib, that is very readily pushed through the skin, thus making the fracture compound. Two splints, about 4 inches wide, and long enough to reach from a few inches above the knee to beyond the foot, are carefully padded, above and below the knee-joint, and above and below the ankle-joint, so as to prevent them from pressing upon the skin where the bone lies just beneath. They are applied one along the outer, one along the inner side of the leg, and fixed with two ties, one above and one below the fracture. A third tie is applied above the knee to fix this joint, and the feet are finally tied together. This fracture takes 8 or 10 weeks to mend.

Fracture of the fibula, the slender bone on the outer side of the leg, may take place in consequence of a kick or

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twist of the foot, while the tibia is uninjured. The person may then be quite able to walk, though with considerable pain. Such an injury is frequently mistaken for a sprained ankle. The temporary treatment should be the same as for fracture of both bones, and the permanent treatment is very similar. This injury is known as a 'Pott's fracture', and is often accompanied by a considerable tearing of the ligaments on the inner side of the ankle-joint when it has been caused by a twist of the foot outwards.

FOOT.—The foot when fractured is put up in splints similar to those for the leg.

PELVIS.—The bones of the pelvis are broken only by excessive violence, such as a crush from the wheel of a heavily laden cart, a fall of coal in a mine, and the like. For temporary treatment, the injured person should have a broad binder fastened round the hips and be lifted on a rug or shutter. The seriousness depends upon the extent of damage done to internal organs.

RIBS are very commonly fractured by a blow on the side. If only one or two be broken and the fracture be simple and uncomplicated, the accident is comparatively trivial. All that is necessary for treatment is that the movements of the chest in breathing should be restricted by a broad bandage, or by strips of sticking-plaster round the chest. The ribs heal very quickly, those above and below the broken ribs acting as splints. If the injured person spits up blood after the injury, the condition is serious, this being a sign that the broken ribs have pierced the pleura and wounded the lung.

SPINAL COLUMN.—This is fractured only by great violence. Mere damage to the bone in this case also is not necessarily serious, but, as the spinal cord is often damaged in the act of fracture, or is pressed upon by a

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displaced fragment, the accident may be a very serious one, the usual result being paralysis of the parts of the body below the level of the injury. Therefore the higher up the spine is fractured, the more serious the consequences. The injured person should not be moved till medical assistance is at hand, or, if he must be removed, this should be done upon a rigid shutter or door, not upon a canvas stretcher or rug, and there should be no lifting which necessitates bending of the back. In such an injury, an operation designed to remove a displaced piece of bone and free the spinal cord from pressure, is sometimes necessary and successful in relieving the paralysis.

SKULL.—Simple fissured fractures and depressed fractures of the skull very often follow blows or falls on the head, and are not serious, as a rule, apart from the damage which may have been done to the brain at the same time.

Compound fractures are attended by risk of suppuration which may spread within the skull, and if the skull be extensively broken and depressed, the operation of 'trephining' is often done in order to cleanse the wound thoroughly. Another risk of fracture is that some of the small arteries on the inner surface of the skull may be torn and may bleed, thus causing 'compression' of the brain. For this reason also the skull is often trephined. Thorough cleansing of the wound, and confinement to bed in a darkened room, constitute the treatment.

JAW.—The lower jaw is frequently fractured by a blow on the face. There is generally bleeding from the mouth, the gum being torn. Also there are pain and grating sensations on chewing, and unevenness in the line of the teeth. The treatment is simple, the line of teeth in the upper jaw forming a splint, against which the lower jaw is bound, with the mouth closed. One bandage is passed

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below the chin and tied on the top of the head; another passes in front of the chin, and is tied on the back of the neck. The two are then prevented from slipping forward and backward respectively, by tying the one to the other on the crown of the head. The patient must be fed for two or three weeks with liquid food, *e.g.* eggs and milk, poured into the corner of the mouth from a feeding-cup with a spout.

NOSE.—The bridge of the nose may be fractured by a fall. The bleeding is copious, and should be arrested by the usual means. (*See HÆMORRHAGE.*) An operation may later be performed to restore the shape of the nose.

FRECKLES, or **SUMMER-SPOTS**, are small yellow or brown spots which appear on the exposed parts of the body, *i.e.* face, neck, and hands, during hot or windy weather. They appear especially in people with delicate skin and red hair.

Treatment.—They are best left alone, but it is said that they may be temporarily removed by painting the skin, night and morning, with a solution of perchloride of mercury (1 grain to an ounce of water) till signs of irritation appear.

FREUD'S THEORY is the term applied to a theory that hysteria and allied diseases are due to a psychic injury or trauma, generally of a sexual nature, which did not produce an adequate reaction when it was received and therefore remains as a subconscious or 'affect memory' to trouble the patient's mind.

FRIAR'S BALSAM (*see* BALSAMS).

FRICTION is the name given to the grating noise heard when two rough surfaces of the body move over one another. It is specially heard over the chest in cases of dry pleurisy.

FRONTAL BONE is the bone which forms the forehead, and protects the frontal lobes of the brain, which are supposed to be the seat of the more

FROST-BITE

purely intellectual functions of this organ.

FROST-BITE results from the action of extreme cold upon parts of the body for some time. Parts may be frozen for a short time, as in surgical operations, without injury ; but when considerable portions, such as a whole hand, are frozen for a lengthened period, and particularly when the circulation is allowed to return too suddenly, the more outlying portions like the fingers are very apt to die, and be separated from the living parts by gangrene.

Symptoms.—The condition is particularly apt to arise in persons addicted to the use of alcohol, whose blood-vessels have lost their proper 'tone', and in whose extremities circulation is sluggish. A part may, by long exposure, be so frozen that the circulation never returns in it, and in this case the part may simply shrivel up, turn black, and undergo dry gangrene without any inflammation. If, however, the freezing process has not been so severe, circulation becomes restored as the part thaws, the vessels in it become widely dilated, and the part in consequence swollen, red, and excessively painful.

Treatment.—The condition is, of course, preventable by keeping the outlying parts of the body, like hands and feet, carefully wrapped up when the cold is intense, and also by maintaining the circulation in full activity by not sitting down, and by avoiding alcohol. Supposing, however, that a part has been frozen, the person should be put in a cold room, the frozen parts rubbed with snow or immersed in moderately cold water, and all stimulants avoided unless the general condition be very feeble. If the reaction becomes excessive and the part very red, both this and the pain may be lessened by raising the affected limb, the person reclining on his back. After a time gentle rubbing with the hand well oiled may be commenced, but the longer the part has

FULLER'S EARTH

been exposed to the cold the longer should be the time that is spent upon its restoration. Finally, when the circulation is restored, the part should be lightly wrapped in cotton-wool or other covering.

FRUIT.—In recent years fruit has become much more accessible and cheap all the year round as an article of diet. Almost all fresh fruits contain about 80 per cent of water, and the nutritive material, consisting chiefly of starch and sugar, does not exceed one-fifth of the fruit. The banana is the most nutritious of the fresh fruits, followed by grapes, plums, and apples. In addition to their food value, fruits contain vegetable acids, such as tartaric, citric, and malic acids, which have an agreeable flavour, a mildly laxative action, and are beneficial to the kidneys. Oranges, lemons, and grape-fruit are specially useful in this way. When, however, fruit is taken in too great quantity, especially if the fruit be unripe, the acids are apt to prove irritating to the intestine, and to cause diarrhoea and colic. The odour and flavour of fruits, which depend upon volatile oils and ethereal bodies, render them an agreeable article of food and improve appetite and digestion.

Dried fruits, such as apples, figs, dates, prunes, and grapes (raisins), form a highly nutritious form of diet, containing 60 or 70 per cent of starch, gum, and sugar ; thus dried dates, figs, or raisins are more nourishing than an equal weight of bread.

Nuts, which consist to the extent of one-half or more of vegetable fat, form a highly concentrated form of nourishment, and if suitably prepared, for example, by roasting to render them more digestible, become of higher nourishing value than cheese, and may to a considerable extent act as substitutes for meat. The chestnut and the almond are the most generally valuable forms of nut.

FULLER'S EARTH is a grey powder free from all grittiness. It

FUMIGATION

consists mainly of aluminium silicate, and is a valuable dusting powder for tender, moist skins, such as those of babies.

FUMIGATION is a means of disinfection by the vapour of powerful antiseptics. (*See* DISINFECTION.)

FUNCTIONAL DISEASES are disorders in which some organ or system does not act properly, although after death no change can be found to account for the condition.

FUNGOID TUMORS are ulcerating growths which sprout rapidly and have therefore a mushroom-like appearance.

FUNGUS POISONING. — This is sometimes caused by eating one of the poisonous fungi in mistake for a mushroom. Not more than some six British fungi are deadly, but even a small

FURUNCLE

piece of one of these may cause serious symptoms.

The symptoms are that shortly after a meal containing one of these, there appear vomiting, feebleness of the heart's action with faintness, and finally unconsciousness or delirium, which may in a few hours end in death.

For immediate treatment an emetic (*see* EMETICS) should be given as soon as possible, followed by brandy or hot coffee as a stimulant. If the fungi have been eaten several hours already, a large dose of castor oil should be given as well.

FURFURACEOUS is a term applied to skin diseases which produce scalliness of the surface, resembling bran.

FURUNCLE is another name for a boil. (*See* BOILS.)

GALACTAGOGUES are drugs which increase the flow of milk in nursing women.

GALL-BLADDER is a pear-shaped sac about 3 inches long, and large enough to contain about an ounce of gall or bile. It lies mainly under cover of the liver, but projects slightly below its edge and beyond the margin of the ribs on the right side, about 3 inches from the middle line of the abdomen. The bile duct from the liver and the cystic duct from the gall-bladder join one another at an angle and form the common bile duct, the three ducts being in the shape of the letter Y. Bile therefore passes sometimes straight from the liver down the common bile duct to the intestine, but at other times it passes back up the cystic duct to the gall-bladder, where a reserve supply of bile is held. This is usually discharged down the cystic duct and common bile duct after a meal to aid the process of digestion.

GALL-STONES.—These are formed of solid material deposited from the bile or from the lining membrane of the gall-bladder. The production of gall-stones is usually preceded for several years by a catarrhal or inflamed condition in the bile ducts and gall-bladder. This arises especially in persons who lead an indolent or sedentary life, and who eat too much for the small amount of exercise they take, and the condition is four times more frequent in women than in men. The gall-stones are of all sizes, from that of sand mixed with thick bile up to stones the size of a hen's egg. When they are of small size, several hundred may be present in the gall-bladder.

Symptoms.—During the early stage of catarrh which precedes the formation of the stones, there is often general ill-health with indigestion, associated with a sallow skin and occasional attacks of biliousness.

There is often felt also a vague uneasy feeling beneath the margin of the ribs on the right side, *i.e.* over the region of the gall-bladder. Apart from these symptoms, stones may lie for years in the gall-bladder and give no trouble, being found accidentally at an operation or after death.

The mere presence of stones in the gall-bladder, however, may give rise to much irritation, and the tenderness and pain over the region of the gall-bladder then become very marked. These symptoms are specially liable to become aggravated during digestion, especially when a meal has contained much fat, so that the condition is taken for a form of dyspepsia, although the pain is at the right side of the body.

The usual way in which gall-stones show their presence is by passing out of the gall-bladder along with the bile. If the stone be small, it reaches the bowel and is voided, without attracting attention beyond perhaps passing discomfort in the upper part of the abdomen, after a meal. If the stone be large enough to stick in the cystic or common bile-duct, and particularly if it be angular, it sets up great spasm of the muscle fibres in the wall of the duct, causing the most agonising pain. This 'gall-stone colic' is felt beneath the rib margin on the right side, sometimes shooting up to the right shoulder. It comes on, as a rule, very quickly, and is accompanied by collapse, cold sweat, and vomiting. It lasts usually several hours, and often ceases quite suddenly, as the stone passes into the bowel or back to the gall-bladder.

Sometimes the stone remains jammed or 'impacted' in one of the ducts, passing neither up nor down. In this case, the pain passes slowly off as the muscle fibres of the ducts become tired out, only to return again and again, till, in a milder degree, it

GALLS

becomes almost constant. Gradually increasing jaundice may develop till the skin becomes even a dark olive brown. At the same time loss of weight and strength, and often dropsy, progress so far that the case may be very difficult to diagnose from cancer.

Treatment.—In the early stages, to lessen the catarrh and check the formation of gall-stones, a simple life with not more than three meals daily, the avoidance of alcoholic beverages and of fatty and rich food, and the taking of more exercise together with the practice of deep breathing, are the main requisites. Drinking large quantities of water is also beneficial.

When an attack of gall-stone colic occurs, hot fomentations should be at once applied to the abdomen. Morphia with or without atropine is given hypodermically. If the pain be excessive, chloroform or ether may have to be given for the fifteen or twenty minutes that elapse before the morphia can take effect. A hot bath, into which the whole body can be put, gives, after a little time, great relief, if these drugs be not at hand.

As to a surgical operation, if a person suffers from repeated attacks of gall-stone colic, it is well that he should undergo the comparatively simple operation of having the gall-bladder opened and the stones removed. In cases where a gall-stone is impacted, an operation is certainly advisable, as the condition is a very serious one.

GALLS, or **NUTGALL**, is the name of an excrescence growing upon oaks and containing a large quantity of tannic acid which gives the galls a strongly astringent action. Galls are chiefly used in the form of ointment of galls and ointment of galls with opium for application to bleeding piles.

GALVANISM (see **ELECTRICITY IN MEDICINE**).

GANGLION means an enlargement of the sheath of a tendon containing

GANGRENE

fluid. This occurs particularly in connection with the sinews in front of, and behind, the wrist.

Symptoms.—A soft, elastic, movable swelling forms, most often, on the back of the wrist. When noticed first it is perhaps the size of a pea, and its connection with a tendon can easily be made out. It may remain of this size for many years and occasion no trouble at all, but generally a ganglion gives a peculiar feeling of weakness to the wrist, and on account of its size or position it may be very inconvenient.

Treatment.—Sudden pressure with the thumbs may often burst a ganglion and disperse its contents beneath the skin, after which it should be prevented from refilling by bandaging the part tightly, a very efficient pad being made by wrapping up a large coin in a piece of lint. If it cannot be burst, counter-irritation by a blister or by painting the skin with iodine solution twice daily, followed by constant pressure with a strap or elastic bandage, will sometimes cause its gradual absorption. Such a strap also relieves the sense of weakness in the wrist which the ganglion causes. If this treatment be not successful, there only remains the opening of the ganglion, with scraping of its interior or injection of some irritating fluid to cause adhesion of the walls of the cavity. It is very apt to refill again unless this be done.

GANGRENE, or **MORTIFICATION**, means the death of a part of the body. The dead part, when formed of soft tissues, is known as a 'slough', and, when part of a bone, is called a 'sequestrum'.

Symptoms.—**DRY GANGRENE** usually comes on in old people with diseased arteries, and is preceded by pain in the affected limb, which gradually becomes a dusky red colour and later brown and black. It is also a dangerous complication of diabetes. The line between the dead and living tissues is quite sharp

GANGRENE

(line of demarcation), and marked by a red ring, where a slight degree of inflammation is going on. There is some smell, especially if care be not taken to keep the foot or other affected part absolutely dry. There is little or no pain after gangrene has occurred, nor any fever, and the red ring gradually deepens till the gangrenous part drops off in the course of some months.

MOIST GANGRENE is the more common form, and is accompanied by putrefaction. The part becomes swollen, livid, and covered with blebs containing fluid, later it turns green and black in places. The smell is very offensive, and much fluid is effused from the decaying tissues, speedily soaking the dressings applied. There is not much pain, but the general symptoms are apt to be very serious, and there is then high fever. In the latter case the person may die of blood-poisoning, and in any case the 'line of demarcation' is not definite, and the gangrene is apt to extend up the limb.

GAS GANGRENE is a form which may occur when wounds are infected with soil from highly cultivated fields like those of Belgium.

Treatment.—The dry form must be kept dry by wrapping in cotton-wool, and, when the line of demarcation has distinctly formed, amputation may be performed close above it. In the moist form, which is not spreading quickly, the surgeon also waits till he can see clearly how much is to become gangrenous, and an attempt is meanwhile made, by cleansing the surface with boric acid or other antiseptic dressings, very frequently changed, to render the gangrene dry. When small parts, like the fingers or toes, become gangrenous after frost-bite, or in the course of diabetes, they may be treated by applying on lint some simple antiseptic ointment, such as boric acid ointment, containing a small amount of eucalyptus or other volatile oil, to subdue the smell.

GARGLES

GARGLES.—Gargling is a process by which various substances in solution are brought in contact with the throat without being swallowed.

Gargles are used in many conditions, but fall, generally speaking, into three groups.

(1) Solvent gargles are used in cases where crusts form in the nose and throat, or where the mucous membrane of the cavities is covered with a layer of tough mucus which cannot be removed by coughing and hawking. The most commonly used substance for this purpose is chlorate of potash, in the strength of about 12 grains to a wineglassful of warm water, though it may be used much stronger if desired. For the same purpose, in order to render the voice clear, singers use a gargle containing one teaspoonful of common salt and one of baking soda to a tumblerful of water. These gargles are improved by further adding some aromatic substances like thymol, or gaultheria, or myrrh, which stimulate the glands of the mucous membrane, with which they come in contact. For an aromatic gargle a frequently used formula is compound thymol liquor, of which a tablespoonful is added to a cup of warm water for a mouth-wash and gargle in inflammatory conditions.

(2) Astringent gargles are used, generally with cold water, in cases where the throat is relaxed or slightly inflamed. Alum is the substance most frequently used (5 or 10 grains to each ounce of water).

(3) Antiseptic gargles are used in suppurative conditions of the throat, and in some cases of chronic tonsillitis with bad breath. Permanganate of potassium in faint pink solution is perhaps the most common. A useful gargle is boric acid, borax, and glycerin (of each one drachm), water (6 ounces) of which a tablespoonful is mixed with a little hot water before use. Peroxide of hydrogen solution in full strength may also be used for an antiseptic gargle.

GAS

GAS (*see* COAL-GAS, NITROUS OXIDE GAS, DAMP).

GAS-POISONING may be the result of working at some dangerous trade, as in the case of miners, or may result from accident as in escapes of coal-gas, or in many cases has resulted from discharges of chlorine or other gas by the enemy on the battlefield. The symptoms vary, but gases may be classed as those which paralyse nerve tissues, those which merely irritate the nose and eyes, and those which cause inflammation of the bronchial tubes and stomach. The early effects gradually pass off and in cases which do not end fatally at the time of gassing, the final effects are not usually more than a slight amount of bronchitis or dyspepsia.

For treatment *see* COAL-GAS.

GASTRALGIA means pain in the stomach. (*See* DYSPEPSIA.)

GASTRECTASIS means dilatation of the stomach. (*See* DYSPEPSIA, STOMACH DISEASES.)

GASTRECTOMY means an operation for removal of the whole or part of the stomach.

GASTRIC means anything connected with the stomach, such as gastric ulcer, gastric catarrh.

GASTRIC FEVER is an old name for typhoid fever.

GASTRITIS means inflammation of the stomach. (*See* DYSPEPSIA.)

GASTRO-ENTERITIS means inflammation of the stomach and intestines, an acute condition occurring most commonly in young children in summer-time. Its main symptoms are vomiting, diarrhoea, and a general collapsed condition. (*See* DIARRHOEA.)

GASTRO-ENTEROSTOMY is an operation performed usually in order to relieve some obstruction to the outlet from the stomach, and consists in making one opening in the lower part of the stomach, another in a neighbouring loop of the small intestine, and stitching the two together.

GASTROPTOSIS means slipping down of the stomach from its attach-

GENERAL PARALYSIS

ments to the upper part of the abdomen. (*See* STOMACH DISEASES.)

GASTROSTOMY means an operation on the stomach by which, when the gullet is blocked by a tumor or other cause, an opening is made from the front of the abdomen into the stomach, so that fluid food can be passed into the organ.

GATHERING is a popular term applied to an abscess.

GELATINE is the name applied to various albuminoid materials derived from animal tissues. It forms a colourless transparent substance hard and brittle when dried, and becoming jelly-like when moistened. It is much used both as a food and in pharmacy. Mixed with about two and a half times its weight of glycerin, it forms a soft substance used as the basis for many pastilles and suppositories. It is added to many fluid forms of food to give them a semi-solid consistency. Strong soups owe their nutritious character mainly to this substance.

GELSEMIUM is the root of the yellow jasmine, a climbing plant of the Southern United States. Its action upon the body is to dull the nervous system. Accordingly, in painful or spasmodic conditions, especially those associated with the head, such as neuralgia, headache, migraine, and eye-strain, it gives relief in small doses.

GENERAL PARALYSIS, also known as GENERAL PARESIS, PARETIC DEMENTIA, DEMENTIA PARALYTICA, CEREBRAL TABES, and CHRONIC MENINGO-ENCEPHALITIS, is a disease in which both bodily and mental powers degenerate; though in one case the bodily symptoms are for a time most marked, in another the mental change appears first. It is in most, if not in all cases, a late result of syphilis.

Symptoms come on very insidiously as a rule, and the disease is often far advanced before it is recognised, though, on the other hand, it may now and then be ushered in by con-

GENERAL PARALYSIS

vulsive seizures, by a sudden maniacal attack, or by a rapid nervous breakdown.

The first stage is characterised by slight physical symptoms, which generally escape the notice of the affected person's friends. These are tremors of the tongue and facial muscles in speaking, transient paralysis of eye muscles producing slight squint and double vision for a time, stammering over difficult words like 'British Constitution' or 'hippopotamus', and, later on, increasing feebleness in walking and disinclination for exertion of all sorts. Furthermore, the handwriting degenerates greatly, and this is often the first symptom that excites remark. All these physical signs are apt to be masked by the peculiar state of mental exaltation which sometimes ushers in the disease. The person often feels himself to be stronger and better than usual, but this is a delusion, and, if he be actually put to the proof, his weakness is discovered. Often such delusions go further, and he believes himself to be very rich, or embarks upon great commercial schemes, or identifies himself with some well-known personality; but however grand his dreams be, there is in them an element of foolishness.

In the second stage the physical weakness becomes more and more marked, and in accord with his passiveness the patient may at first become stout, though he loses this appearance as his digestive powers fail.

In the third stage the mental failure is profound, and the sufferer cannot recognise even his nearest relatives. Speech degenerates to a series of meaningless noises. The paralysis becomes complete, and the person lies oblivious to all around him, and unable even to control his bladder and bowels. In this stage he becomes a ready prey to any infectious disease, and large bed sores form readily on the devitalised frame. If, by careful

GERMAN MEASLES

nursing, these be prevented, death gradually approaches and takes place from weakness.

Treatment.—The first essential in treatment is to remove the person from the chance of indulging in those excesses which aggravate the malady. The delusions generally render the person unfit to transact business, and even dangerous to his friends. For all these reasons, treatment is best carried out in an asylum, where care is taken that the person lives a well-regulated life, with sufficient exercise and suitable food. In the later stages, careful and skilled nursing is indispensable.

Recognition of general paralysis at a very early stage is of the greatest importance for two reasons. In the first place, the person suffering from an early stage of this disease is liable through mental weakness to transact his business affairs badly and lose his means, although still regarded by his friends as merely slightly peculiar or eccentric. In the second place, treatment at this stage affords considerable prospect of stopping the progress of the disease.

GENTIAN is the root of the yellow gentian, a European plant. Preparations made from it are very bitter, and it is one of the most commonly used bitters in dyspepsia and loss of appetite.

GERMAN MEASLES is an acute infectious disease of a very mild type which resembles both measles and scarlatina, and which is known also by the following names—rubella, røtheln, epidemic roseola, hybrid measles, and hybrid scarlet fever.

It is highly infectious, though the cause of infection has not been discovered. Previous attacks of measles and scarlatina gave no protection against it, and it frequently attacks adults. As the stage of incubation after infection and before the disease shows itself is long, a child from an infected household cannot be considered free from the risk of catching

GESTATION

this disease till he has been isolated for about three weeks.

Symptoms are very mild, and the disease is not at all serious. On the day of onset there may be shivering, headache, slight catarrh with sneezing, coughing and sore throat, very slight fever, not above 100° Fahr., and at the same time the glands of the neck become enlarged. These symptoms may be all so slight, however, as to escape notice. On the second day a pink, slightly raised eruption appears, first on the face, then on the chest, and on the third day spreads all over the body. The appearance of the rash is intermediate between that of measles and scarlatina, being less blotchy than the rash of measles, and the spots being more definite than the fairly uniform redness of scarlatina. The rash is very bright on some parts of the body, while other parts are almost entirely free. The duration of the rash is variable. It may last for the greater part of a week, and, as it disappears, fine bran-like scales separate from the surface. The most distinguishing feature of this disorder is a well-marked but transient enlargement of the glands in the neck.

Treatment.—The only treatment necessary, is confinement to bed at first, and isolation from other children. The child may be considered free of infection when the scales have ceased to separate, or in about ten days after the eruption has appeared.

GESTATION is another name for pregnancy.

GIDDINESS, OR **VERTIGO**, is a condition in which the affected person loses the power of balancing himself, and has a false sensation as to his own movements or as to those of surrounding objects.

The simplest cause of giddiness is some mechanical disturbance of the body affecting the fluid in the internal ear; such as that produced by moving in a swing with the eyes shut, the motion of a boat causing sea-

GINGER

sickness, or a sudden fall. (*See* **SEA-SICKNESS**.) The cause which produces the most severe and most sudden giddiness is Ménière's disease, a name under which are grouped the various forms of direct injury to the internal ear. A condition of similar nature, though less violent and less permanent in its effects, is sometimes produced by the removal of wax from the ear, or even by syringing out the ear. A third group of causes for giddiness is found in disorders of the stomach. Refractive errors in the eyes which have not received appropriate treatment by glasses, an overstrained nervous system, an attack of migraine, a mild attack of epilepsy, and gross diseases of the brain, such as tumors, form another set of causes acting more directly upon the central nervous system. Finally, giddiness may be due to some disorder of the circulation, *e.g.* in fainting, or to the congestive state of the brain often found at the climacteric.

Treatment, while the attack lasts, consists in lying down in a darkened, quiet room. Bromides are the drugs which have most influence in diminishing giddiness when it is distressing; while a dose of purgative medicine is also of advantage in cases that are more than transient. After the attack is over, careful examination is necessary in order to determine the cause, for upon this depends the appropriateness of treatment.

GIN is an alcoholic beverage made from rye or barley with the addition of juniper berries and hops. It is useful as a diuretic in cases where the urine is scanty, and where no serious inflammation of the kidneys is present. Its habitual use is supposed to be particularly liable to cause cirrhosis of the liver. (*See* **ALCOHOL**.)

GINGER is the root of a plant which grows in India, Jamaica, and other tropical countries. In the case of black ginger the bark is left on, while white ginger is the root without bark. Its properties are due to a hot volatile

oil and an aromatic resin. The tincture and syrup of ginger act like preparations of other volatile oils, and are given in doses of about a teaspoonful. They are used in cases of flatulence to stop griping, and are added to purgative medicines for the same purpose.

GINGIVITIS means inflammation of the gums. (*See* **TEETH, DISEASES OF.**)

GLANDERS, or **EQUINIA**, is an infectious disease to which certain animals, chiefly those possessing an undivided hoof—such as horses, asses, and mules—are liable, and communicable by them to man, though oxen and swine are, curiously, quite immune to the disease. The term ‘farcy’ is also used to designate a variety of the disease in which the lymphatic glands are first and chiefly affected.

GLANDS are divisible into several classes. In the first place, the term is applied vaguely to organs like the liver, pancreas, and kidneys, which produce a secretion; but in general the term is limited to smaller structures concerned in the production of some excretion from the body, or of some substance needful to its working. These latter are divided into two very distinct groups: (1) glands which produce some formless secretion or excretion, like the thyroid and pituitary glands; (2) lymphatic glands.

GLANDS, DISEASES OF.—The diseases of the chief secreting glands are described under various headings, and reference is made here only to diseases of the lymphatic glands. Most of the diseases which affect these glands are of an inflammatory nature, various poisonous substances lodging in them in the attempt to pass through the system by way of the lymphatic vessels. (*See also* **ENDOCRINE GLANDS.**)

SIMPLE ENLARGEMENT AND SUPPURATION OF A GLAND is the commonest condition. This generally follows upon the presence of

some wound or other source of infection in the area drained by the lymphatic vessels going to the gland. For example, a gumboil may result from the presence of a carious tooth, and as the gumboil subsides a gland beneath the jaw may enlarge, become inflamed, and may pass on to suppuration and form an acute abscess. Again, any source of irritation about the head, such as lice or eczema, is apt to produce swelling of the glands behind the ear and down the neck; or a wound of the foot or hand to cause inflammation of the glands in the groin or armpit respectively.

Treatment.—The object at first is to prevent suppuration of the enlarged and inflamed gland. For this purpose the source of irritation must be removed by opening the gumboil, cleaning the head, dressing the wound of the foot, etc. The gland itself is best let entirely alone, or at most kept supported and at rest by a pad of cotton-wool and flannel bandage. Later, as the inflammation subsides, various counter-irritants (*see* **BLISTERS**) may be applied to assist in its reduction to a natural size. If the swelling becomes soft and the skin over it reddened, suppuration is taking place, and the condition must be treated as an acute abscess. (*See* **ABSCCESS, ACUTE.**)

GLANDULAR FEVER is a condition which occurs in little epidemics, especially in autumn, among children living in one household or at school together. The glands of the neck become, in the course of a day or two, much enlarged and tender, and at the same time there is fairly high fever, and the child loses all appetite for food.

Treatment.—The child should, at first, be confined to bed, and as constipation is generally present, a dose of castor oil may be given. For the rest, the neck should be kept warm and still by a flannel bandage and cotton-wool, but no further application is necessary, as the glands rarely suppurate. Tonics and careful feed-

ing are necessary afterwards, since the general health is a good deal depressed.

TUBERCULAR GLANDS or **SCROFULA** is a very common disease of childhood, especially in the neck. It appears as if in many cases the glands become infected by the tubercle bacillus through the tonsils. The chain of glands under the jaw and that running up and down the neck become affected in most cases, while in others the glands inside the abdomen are diseased. The condition in the neck progresses very slowly; as a rule, the glands enlarging for some months, then becoming matted together, to form an irregular mass, which softens, reddens here and there, and finally bursts through the skin to produce sinuses, which may go on discharging for years, healing finally with red, puckered, unsightly scars.

Treatment.—In the first stage, while the glands are simply enlarging, general treatment to improve the constitution is required. The child must stop attending school and should spend much time in the open air, a change to the seaside being apparently of special benefit. The diet should be constructed upon the same principle as that for other tubercular conditions. (See **CONSUMPTION**.) Various tonics, bitters, and aids to digestion are given, of which the chief are syrup of the iodide of iron, cod-liver oil, and malt extract. A bandage or other appliance is often used in order to keep the part, where the enlarged glands are situated, more effectually at rest. This form of treatment may be persevered with so long as the glands are not becoming matted together. When the latter change takes place it is usually best to have the whole mass removed by operation, after which healing is, in general, immediate, and a narrow, barely visible scar is left. If suppuration be allowed to take place, and the abscess to burst of itself, it is almost impossible to avoid an unsightly scar. When this

accident has occurred, and a discharging sinus is present, the best that can be done, in general, is for the surgeon to aid healing by scraping the sinus out and dressing it frequently in such a way that it may heal from the bottom. Treatment by heliotherapy or by ultra-violet rays is very valuable in all stages of this condition. (See **LIGHT TREATMENT**.)

CANCER, when it is present in any organ, sooner or later affects the neighbouring lymphatic glands. It is by way of the lymphatic system, indeed, that cancer usually spreads to parts at a distance, and glands in a part of the body far removed from the original cancer may become affected, while the intervening tissues remain healthy. This is the chief reason for the recurrence of cancer after apparently complete removal. As an example of this, it may be noted that the glands on the left side of the neck are very prone to be diseased as a result of cancer in the stomach; those in the armpit become affected early in cancer of the breast.

OTHER CONDITIONS which produce enlargement of glands are the venereal diseases, leucæmia, and a disease known as lymphadenoma, or Hodgkin's disease.

GLAUBER'S SALT, or **SULPHATE OF SODA**, is used as a saline purgative in doses of a quarter to half an ounce, dissolved in a wineglassful of water.

GLAUCOMA is a disease of the eye, occurring most commonly after the age of fifty years, in which the pressure within the eye rises and destroys the visual nerve fibres.

Symptoms.—Very often glaucoma appears so slowly, and with so little pain, that the condition is far advanced before it attracts special attention, but sometimes a series of well-marked acute attacks gives warning that a serious condition is present and allows it to be averted or lessened by early treatment. An acute attack usually begins at night

GLEET

with great pain in one eye, shooting through one side of the head, and this pain may be so severe as to produce sickness and vomiting at first. In more prolonged cases coloured halos are seen round lamps and candles, and there are various other peculiarities of vision. The veins on the surface of the eye are distended, giving it a bloodshot appearance, and the pupil is often wide and oval in shape instead of small and round like that of the sound eye. Attacks become more and more frequent as time goes on, and the vision gets steadily worse. In chronic glaucoma the eye becomes gradually blind without these acute attacks.

Treatment.—The operation of iridectomy is the usual treatment for glaucoma.

When the condition is very slowly progressing, or when, for any reason, operation is inadvisable, a solution containing 1 per cent or less of eserine is dropped into the eye night and morning, and since this drug powerfully contracts the pupil, the iris is drawn away from the cornea and the angle between them opened up for filtration. This treatment may be continued daily for months or years.

GLEET means a chronic form of gonorrhœa.

GLIOMA is the name given to a tumor which forms in the brain or spinal cord, composed of the special connective tissue that in these organs supports the nerve-cells and nerve-fibres.

GLOBUS is a term applied generally to any structures of ball shape, but especially to the sensation of a ball in the throat causing choking, which forms a common symptom of hysteria.

GLONOID (*see* NITRO-GLYCERIN).

GLOSSITIS means inflammation of the tongue.

GLOTTIS is the narrow opening at the upper end of the larynx. (*See* CHOKING.)

GLUCOSE is the form of sugar

GLYCERITE

found in honey and in grapes and many other fruits. It is also the form of sugar passed in the urine of those suffering from diabetes. It forms a valuable food which is very readily absorbed, and is found in large amount in jam and other preparations made from fruit.

GLUTEN is the constituent of wheat-flour which forms an adhesive substance on addition of water, and therefore permits of the 'raising' of bread. It can be separated from the starch of flour, and being of a protein nature, is used to make bread for those diabetics who are debarred from starchy and sugary foods.

GLYCERIN is a clear, colourless, thick liquid of sweet taste.

Glycerin has many varied uses. Numerous substances, such as carbolic acid, tannic acid, alum, borax, boric acid, starch, are dissolved in it for application to the body. It is frequently applied along with other remedies to inflamed areas for its action in extracting fluid and thus diminishing inflammation.

Mixed with an equal quantity of water it forms a useful mouth-wash when the tongue and gums are furred or dry. It is useful for application to the skin in order to prevent chapping in cold weather, and to protect and heal all sorts of small abrasions.

Internally, pure glycerin in doses of 1 to 2 teaspoonfuls acts as a purgative, administered either by the mouth or as an injection. For its pleasant taste it is added to various medicines, and to the food of diabetics. It is mixed with gelatine to form a basis for pastilles, etc.

GLYCERITE is a mixture of glycerin with a medicinal substance. The principal glycerites are those of alum, borax, boric acid (known as boroglycerin), gallic acid, subacetate of lead, carbolic acid, starch and tannic acid. These are used as applications especially to the mucous membrane of the mouth and throat for the action

GLYCEROL

of the various medicinal substances contained.

GLYCEROL is another name for glycerin.

GLYCEROPHOSPHATES of lime, iron, etc., are compounds of glycerin and phosphates, supposed by some to be specially beneficial as tonics in debility, because glycerophosphoric acid is a constituent of nerve tissue.

GLYCOSURIA means the presence of grape-sugar in the urine in *Diabetes mellitus* (see **DIABETES**), and in some other states.

GOITRE, also known as **BRONCHOCELE** or **DERBYSHIRE NECK**, is a term applied to a swelling on the front of the neck caused by an enlargement of the thyroid gland.

SIMPLE GOITRE occasions a swelling which is well marked, and is not only unsightly, but may by its growth occasion much discomfort, and even give rise to serious symptoms from its pressure on the wind-pipe and other important parts in the neck.

Symptoms.—In districts where the disease prevails, the goitre usually appears in early life, often from the eighth to the twelfth year. Its growth is at first slow, but, after several years, a somewhat sudden increase occasionally occurs. In the earlier stages of the disease, the condition of the thyroid gland is simply an enlargement of the gland, which retains its normal, soft consistence, and is distended by glue-like material. Later the gland gets harder and cysts may form in it.

Treatment.—The first step is usually the removal of the person from the affected locality, and attention to general hygienic rules. In young persons a slight enlargement may simply show an increased demand of the system upon the functions of the thyroid gland, and this may be satisfied by administration of extract of sheep's thyroid or of iodine in small doses, when the swelling subsides. Surgical treatment is neces-

GOITRE

sary in certain cases, where a distinct tumor or large cyst occupies the gland, or where the gland causes pressure symptoms by its size or is considered unsightly.

EXOPHTHALMIC GOITRE is the name applied to another form of enlargement of the thyroid gland, in which marked constitutional changes occur. In this disease, the goitre is one of several symptoms which form the most noticeable features of the disease, viz. extreme nervousness, muscular tremors, palpitation of the heart and throbbing of the great vessels, enlargement of the thyroid gland, and protrusion of the eyeballs. This group of symptoms is often known also by the name of Graves's disease.

Symptoms.—The first of the symptoms to appear are generally the nervousness and the palpitation of the heart, which is aggravated by the slightest exertion and may be very severe. The rate of the pulse is much increased, commonly to 120 per minute or more. An uncomfortable sensation of throbbing is felt throughout the body, and many of the larger blood-vessels are seen to pulsate strongly like the heart. There are marked tremors of the muscles and limbs, especially after any exertion. The enlargement of the thyroid gland generally comes on gradually; it rarely increases to any great size, thus differing from simple goitre.

Accompanying the goitre a remarkable change is observed in the appearance of the eyes, which attract attention by their prominence and by the fact that a space of the white of the eye is left exposed all round the iris (exophthalmos). A startled or frightened expression is thus given to the countenance. In extreme cases the eyes protrude from the sockets to such a degree that the eyelids cannot be closed, and injury may thus arise to the constantly exposed eyeballs.

Exophthalmic goitre is not often

GOLD

a directly fatal malady, but the nervousness, palpitation, and muscular weakness may render the patient unfit for even the slightest exertion. Partial improvement and relapses occur from time to time, especially after periods of rest, and, as age progresses, the goitre and the symptoms tend to abate and disappear. In some cases, the patient, in old age, passes into the opposite condition of myxœdema, the thyroid gland appearing to be completely worn out.

Treatment.—Many cases with slightly marked symptoms recover when placed under conditions of rest and freedom from worry, these being the most important factors of treatment in every case. Some cases are benefited by the administration of iodine, while others are unaffected or made decidedly worse by this substance. Radiation of the gland with X-rays or by the application of radium is followed by diminution of the symptoms in almost all cases; sometimes the amount of benefit is very great, but in other cases the benefit continues merely for some months. Radiation may have to be repeated several times. Surgical procedures of various kinds have been practised for the relief of this condition. Excision of the gland is a dangerous operation, but, in suitable cases, it is often followed by a cure of the symptoms.

GOLD is used to a very limited extent in medicine, the chloride of gold being given occasionally in small doses as a tonic in nervous diseases. It has also been tried as a remedy for tuberculosis, but without much apparent benefit.

GOLDEN OINTMENT is another name for yellow oxide of mercury ointment, which is much used for inflammation of the eyelids.

GOLDEN SEAL, or **HYDRASTIS**, is the dried root of a Canadian plant. Various preparations are used, both as a gastric stimulant in order to increase the appetite, and to check

GONORRHŒA

internal hæmorrhage, particularly that from the womb.

GONORRHŒA is an inflammatory disease affecting especially the mucous membrane of the urethra in the male and that of the vagina in the female, but spreading also to other parts.

Symptoms.—These differ considerably according to whether the disease is in an acute or a chronic stage. In *men*, after an incubation period of between two and ten days, irritation in the urethra, scalding pain on passing water, and a yellowish-white discharge appear; the glands in the groin often enlarge and may suppurate. The urine when passed is hazy and is often found to contain yellowish threads of pus visible to the eye. After some weeks, if the condition has become chronic, the discharge is clear and various forms of inflammation in neighbouring organs may appear, the testicle, prostate gland, and bladder becoming affected. At a still later stage the inflammation of the urethra is apt to lead to narrowing, so that the passage of water becomes difficult or may be stopped for a time altogether (the condition known as stricture). Inflammation of some of the joints is a common complication, the knee, ankle, wrist, and elbow being the joints most frequently affected, and this form of 'rheumatism' is very intractable and liable to lead to permanent stiffness. In occasional cases, during the acute stage, a general blood-poisoning results with inflammation of the heart-valves (endocarditis) and abscesses in various parts of the body.

In *women* the course and complications of the disease are somewhat different. It begins with a yellow vaginal discharge, pain on passing water, and very often inflammation or abscess situated close to the opening. The chief seriousness, however, of the disease is due to the spread of inflammation to neighbouring organs, the uterus, Fallopian tubes, and ovaries, causing permanent destruc-

GONORRHOEA

tive changes in these, and leading occasionally to peritonitis through the Fallopian tube, with a fatal result. Many cases of prolonged ill-health and sterility or recurring miscarriages are due to these changes.

The infective matter occasionally is inoculated accidentally into the eye, producing a very severe form of conjunctivitis. In the newly born child this is known as *ophthalmia neonatorum* and is one of the chief causes of blindness. (See EYE DISEASES.)

Treatment.—In the acute stage the patient should subsist on a low diet and avoid all kinds of sauces and condiments, as these have generally an irritating effect upon the inflamed urinary passages. Above all, alcohol in every form is prohibited. The patient should lead a quiet life during treatment, or, in the early stage, remain in bed, and should avoid violent forms of exercise at a later period. Warm sitz baths are also beneficial. As regards internal remedies, these are not usually required, though in severe cases alkalies such as citrate of potassium, soothing substances such as belladonna and hyoscyamus, and urinary antiseptics such as sandalwood oil, copaiba, and hexamine are sometimes administered. As a rule some astringent and antiseptic substance is used locally in the form of a douche, though the manner and frequency of its application depend to a great extent upon the extent of the disease. Potassium permanganate is one of the antiseptics most frequently employed. Many other substances are also used, such as salts of zinc, nitrate of silver, protargol, argyrol, etc. Vaccine treatment is in many cases adopted, a 'detoxicated' vaccine of gonococci being especially employed. The rheumatic joints are treated as in other forms of rheumatism, especially by applications of heat. Strictures are treated by dilatation with bougies, instruments of tapered shape

GOUT

resembling catheters. In severe cases it may be necessary to have the stricture dilated in this way every few months throughout many years. When cure of the discharge has apparently taken place, all treatment should be suspended for a few days and a careful bacteriological examination should be carried out, before the patient can be considered free of the disease.

GOULARD'S WATER is the popular name for the dilute solution of subacetate of lead, which is extensively employed in the treatment of sprains, bruises, and localised inflammations. It is commonly mixed with laudanum in the proportion of 1 dram of laudanum to 1 ounce of the Goulard's water, and the mixture, known as 'lead and opium lotion', is applied on a piece of moist, warm flannel, and covered with waterproof cloth. It is also used in various itchy and eczematous conditions of the skin.

GOUT is a constitutional disorder connected with excess of uric acid in the blood, and showing itself by inflammation of joints and also by changes in various important organs.

Symptoms.—An attack of gout may appear without warning, or there may be symptoms of digestive or other disorder. On the night of the attack, the patient retires to rest apparently quite well, but about two or three o'clock in the morning is awakened by a painful feeling in the foot, most commonly in the ball of the great toe, but it may be in the instep or heel, or in the thumb. With the pain there often occurs a distinct shivering, followed by feverishness. The pain soon becomes of an agonising character.

When the affected part is examined it is found to be swollen and of a deep red hue. The skin is tense and glistening, and the surrounding veins are more or less distended. After a few hours there is a remission of the pain, slight perspiration takes place,

GOUT

and the patient may fall asleep. The pain, however, returns next night, and continues with greater or less severity during the continuance of the attack, which generally lasts for a week or ten days. After this the swelling and tenderness of the affected joint abate. When the attack is over, the patient feels quite well, and fancies himself better than he had been for a long time before; hence the once-popular notion that a fit of the gout was capable of removing all other ailments.

The disease, however, tends to take a firmer hold on the constitution and to return, and in the course of time other joints become implicated, and the disease thus becomes chronic. Chalk-stones or 'tophi' are gradually formed round the affected joints. These deposits at first take place in the form of a semi-fluid material, consisting for the most part of bi-urate of soda, which gradually becomes more dense, and ultimately quite hard.

The gouty nature of some long-continued internal, eye, or skin disorder may be rendered apparent by its disappearance on the outbreak of the attack in the joints. Gout, when of long standing, is often found associated with degenerative changes in the heart and large arteries, the liver, and especially the kidneys. (*See BRIGHT'S DISEASE.*) A variety of urinary calculus—the uric acid—formed by concretions of this substance in the kidneys is a not infrequent occurrence in connection with gout; hence the well-known association of this disease and gravel.

Treatment.—The usual plan is somewhat as follows: During the acute attack the affected part should be kept at perfect rest, and have applied to it warm fomentations or poultices, or, what answers better, be enveloped in cotton-wool. The diet should be light, without animal food or stimulants. The use of some laxative, such as calomel (3-5 grains),

GRAVES'S DISEASE

followed by a saline purge, is of service. Wine of colchicum is usually administered (10-30 drops every four or six hours) or extract of colchicum in pill.

When gout has become chronic, more benefit appears to be derived from iodide of potassium, guaiacum, and more especially from the alkalies potash and lithia.

The diet and habits in the intervals of the gouty attacks are of the highest importance. Restriction of the amount and quality of the food, and still more of the alcoholic stimulants, and regular but moderate exercise in the form of walking, in the case of those who lead sedentary lives, are of great advantage.

GRAFT is the term applied to a small piece of skin or other tissue removed from one person or animal and implanted in another in order by its growth to supply some defect.

GRAM, or **GRAMME**, is the unit of weight in the metric system and is equal to a little over 15.4 grains. For purposes of weighing food, 30 grams are usually taken as approximately equal to 1 ounce.

GRAND MAL is the name applied to a convulsive epileptic attack, in contrast to 'petit mal', which includes the milder forms of epilepsy.

GRANULAR KIDNEY is the name given to the state of the kidney in the chronic interstitial form of Bright's disease (*see BRIGHT'S DISEASE*), which often occurs in association with gout.

GRANULOMA is a term applied to a tumor or new growth made up of granulation tissues. This is caused by various forms of chronic inflammation, such as syphilis and tuberculosis.

GRAVEL is the name applied to any sediment which falls down in the urine, but particularly to small masses of uric acid. It produces various unpleasant symptoms.

GRAVES'S DISEASE is another name for exophthalmic goitre.

GREEN SICKNESS

GREEN SICKNESS is a popular name for chlorosis. (*See ANÆMIA.*)

GREGORY'S MIXTURE or POWDER is a powder of light-yellow colour containing rhubarb, magnesia, and ginger. In teaspoonful doses it is very widely used as an antacid and purgative.

GREY POWDER is a powder composed of mercury and chalk, which is used for administration to young children in cases where the use of mercury seems desirable. It is much used as an ingredient of powders intended to check the infantile diarrhœa which results from conditions of fermentation within the bowels. To young children it is generally given in doses of 1 grain, or less if repeated.

GRIPES is a popular name for the colic of infants, generally due to irregular feeding. (*See COLIC.*)

GRIPPE is a popular name for influenza. (*See INFLUENZA.*)

GROIN is the name applied to the region which includes the upper part of the front of the thigh and lower part of the abdomen.

GROWING PAINS frequently occur in children during the course of development. These are usually due to the muscles not having attained sufficient development for the size and activity of the child. They occur most commonly in the legs and back. When they occur in the back, special care is necessary in attending to the posture of the child at work and rest, because weakness of the back muscles associated with faulty posture is apt to lead to a certain amount of twisting of the spine, drooping of one shoulder, and other forms of mal-development. The pains are treated by ensuring that the child has a sufficiency of rest, and the development of the muscles is increased by appropriate exercises and by massage. Severe pains in young children are occasionally due to actual disease in a bone, either of tubercular nature or caused by acute inflammation, and

GUMBOIL

special attention is required in such cases.

GROWTH is a popular term applied to any new formation in any part of the body. (*See ANEURYSM, CANCER, CYST, GANGLION, TUMOR.*) For growth of children, etc., see **WEIGHT AND HEIGHT**.

GRUEL is the name given to a thin paste or thick fluid made of oatmeal or maize meal and milk or water. Gruel is made by mixing 3 tablespoonfuls of meal with 1 pint of cold milk or water, allowing to stand for 15 minutes, then straining and boiling for 15 minutes, and finally flavouring with salt and, if desired, with sugar.

GUAIAK is a resin obtained from the wood of a West Indian tree. It is largely used in rheumatism and in acute tonsillitis in the form either of the tincture or the ammoniated tincture of guaiac.

GUAIACOL is a light-coloured, yellowish fluid of pleasant smell, obtained from beechwood creosote. It is chiefly used to treat the fever of consumption.

GULLET, or ŒSOPHAGUS, is the tube down which food passes on its way from the throat to the stomach. It passes through the regions of the neck and chest, lying close in front of the spinal column, and its length is about 10 inches.

GUM is a sticky substance which exudes from the stems and branches of various trees. The two best-known gums are gum acacia and gum tragacanth. Gum-resins are similar substances containing also resins, such as asafœtida, galbanum, and myrrh.

GUMBOIL is a condition of inflammation, ending generally in abscess, situated about the root of a decayed tooth. The gumboil results often from a chill, or may appear beside a tooth which has been long in a carious condition, at a time when the general health is below par.

Symptoms.—One tooth becomes a

little painful and seems a little raised above the others, but the pain is at first relieved by clenching the teeth tightly, though after a day or more the affected tooth becomes extremely tender. A thickening forms at the side of the tooth, which is also at first relieved by pressure, as by holding a pad of cotton-wool, or a fig, or similar soft mass between gum and cheek. After some days the pain lessens, and either the swelling gradually subsides, or an abscess forms and bursts, generally between gum and cheek, but, it may be, on the cheek.

Treatment.—If there be any cavity in the tooth it should be stopped with cotton-wool soaked in pure carbolic acid, or in a volatile oil, such as oil of cloves, and, if the pain and swelling do not speedily abate, the tooth should be pulled. Relief to the inflammation in early stages is often gained by painting the gum freely with tincture of iodine. If the swelling be considerable, immediate relief is often gained when the gum is scarified down to the bone on the outer side between gum and cheek.

If the skin is getting red over the swelling, this should be done as soon as possible, for, otherwise, the abscess is likely to burst through the cheek, leaving an unsightly scar.

GUMMA means a hard swelling situated usually in connective tissue, though it may be in internal organs, muscle, or brain, and resulting from syphilis. The swelling is usually painless, but it may produce very marked symptoms by interference with the organ in which it is situated. A gumma generally disappears speedily when its nature is recognised, and the treatment appropriate to syphilis administered.

GUMS, DISEASES OF (*see* MOUTH, DISEASES OF, *and* TEETH, DISEASES OF).

GUTTA-PERCHA is used in the preparation of some varieties of sticking-plaster, but its main use is, rolled out in thin films, known as gutta-percha tissue, to keep surgical dressings moist by preventing evaporation.

GYNÆCOLOGY means that branch of medical science which deals with diseases peculiar to women.

H

HABITS (*see* DRUG HABITS ; also CHILDREN, PECULIARITIES OF).

HÆMATEMESIS means vomiting of blood.

HÆMATOCELE means a cavity containing blood.

HÆMATOMA means a collection of blood forming a definite swelling.

HÆMATOTHORAX means an effusion of blood into the pleural cavity.

HÆMATOXYLON, or LOGWOOD, is the wood of a West Indian tree, of which extracts have a mildly astringent action, and are consequently used in pills and mixtures for checking diarrhoea.

HÆMATURIA means any condition in which the urine contains blood. (*See* URINE.)

HÆMOGLOBIN is the colouring material which produces the red colour of blood and muscle.

HÆMOGLOBINURIA means the presence of blood pigment in the urine caused by the destruction of blood corpuscles in the vessels or in the urinary passages. It produces in the urine a dark reddish-brown colour resembling porter.

HÆMOPHILIA is a hereditary disease, confined almost entirely to members of the male sex who are called 'bleeders', and in whom uncontrollable bleeding is apt to follow upon very slight wounds.

The disease shows itself within the first year or two of the boy's life by excessive bleedings, when small wounds are sustained, and by large bleedings under the skin or into joints where parts of the body are bruised. The bleeding is a general slow oozing from the capillary vessels, and even small operations like the removal of a tooth may be dangerous. Sometimes a person dies during a bleeding, but as a rule after much blood is lost the flow ceases, and the person gradually recovers from the resulting anæmia. The tendency to

bleed generally passes off as age advances.

HÆMOPTYSIS means the spitting up of blood from the lower air passages.

HÆMORRHAGE means any escape of blood from the vessels which naturally contain it. It may occur from a wound of the skin, in which case it escapes externally, or into some internal cavity such as the stomach or bowels, or may simply be poured out into the tissues in consequence of a blow or similar injury ; but, in all cases alike, the blood escaping from the vessels is lost to the circulation.

In general, arterial hæmorrhage is the most serious, and if a large artery, such as the femoral, be wounded, the person concerned may bleed to death in a few minutes. Venous hæmorrhage is so easily checked by slight pressure, and the valves in the veins so effectively prevent blood from running backwards in these vessels, that this form is not dangerous to life except in the case of ruptured varicose veins of the leg, or when a serious internal injury is received. Capillary hæmorrhage stops so quickly, that only in the case of the disease known as hæmophilia is it of serious import.

Control of external hæmorrhage.—Four main principles are applicable in the control of a severe external hæmorrhage, viz. (a) direct pressure on the bleeding point or points ; (b) elevation of the wounded part ; (c) pressure on the main artery of supply to the part ; and (d) application of substances known as 'styptics', which contract the vessels or aid the coagulation of the blood.

(a) **DIRECT PRESSURE** may be made with the finger, which is the best method, when a definite bleeding point is seen in a gaping wound. This is the method adopted at an operation by the surgeon, who places his finger at once upon any bleeding

point, afterwards seizing the cut artery with forceps and tying a piece of silk or catgut tightly round its end. If the artery lie between the skin and a hard surface, as in the case of scalp wounds, a pad and tight bandage may be substituted for pressure with the finger, the edges of the wound being compressed between the pad and skull.

(b) **ELEVATION** of the bleeding member is an important method, the blood running off more readily by the veins, and a smaller quantity being driven into the limb the higher it is raised. This method is applicable, of course, only in cases of bleeding from the hand or foot.

(c) **PRESSURE UPON THE MAIN ARTERY** of supply to the injured limb is a certain method of stopping the circulation and consequently all bleeding, much after the manner of stopping the water supply of a district by closing the main pipe. At a few points (face, neck, arm, wrist, groin, and ankle) the main arteries lie near the surface and may be compressed against a bone by the fingers.

A second method for preventing blood from entering a limb consists in *forced flexion* at the elbow, hip, or knee, as the case may be. A pad is placed in the bend of the joint, which is then bent as completely as possible over the pad and firmly bound in this position, the artery being thus sharply bent upon itself.

A third method for control of the main blood supply is by the *tourniquet*, which consists of an elastic band or ligature passed round a fleshy part of any of the limbs, and pulled or twisted tight. A tourniquet may be 'improvised' from a piece of rope, or a handkerchief folded cravatwise, tied round the limb and then twisted up tight by a piece of wood, large key, or similar object introduced beneath it. The handle of such a tourniquet is prevented from untwisting by passing a second band round the limb and including the end

of the handle within it before tying. A tourniquet may be applied to the fleshy part of thigh, leg, upper arm, or forearm. The application of a tourniquet is slightly painful, but this may be almost entirely prevented by raising the limb before it is applied, in order to empty the veins of blood.

(d) **STYPTICS** are applied when the bleeding is a general ooze from a wound, or when the bleeding comes from an inaccessible position, such as the interior of the nose or a wound in the side. The most important styptics are heat and cold. Though moderate warmth greatly increases bleeding, ice-cold water and also water between 115° and 120° Fahr. (*i.e.* a temperature which the hand can hardly bear) both favour clotting and contract the blood-vessels.

Control of internal hæmorrhage is not to be so certainly achieved as in the case of bleeding from the vessels of the limbs. There are certain general principles to which it is most important to adhere. Chief among these is to lay the patient flat on the back, since the heart beats less forcibly and the blood-pressure is consequently lowered as soon as the injured person lies down. For the same reason, all excitement must be avoided, and the mind of the sufferer quieted as far as possible. Stimulants must, above all, be avoided; and if the person shows a disposition to faint, this is a good symptom, as the circulation during a faint becomes still weaker, and the bleeding therefore slackens. Ice-bags or compresses wrung out of cold water may be laid over the chest or stomach, according to the origin of the hæmorrhage. Various drugs are administered, such as morphia, by hypodermic injection, for its quieting effect. In the hæmorrhage which sometimes follows childbirth, vaginal douches of hot water form one of the usual means employed, or plugs of absorbent cotton-wool steeped in tincture of perchloride of iron or adrenalin

HÆMORRHOIDS

solution are introduced, and these, combined with pressure, seldom fail to arrest the bleeding. The arrest of bleeding is also helped by injection of pituitary extract after the labour.

Treatment of bleeding from special sites.—**NOSE.**—Keep quiet, lying or sitting; loosen collar; no blowing of nose; cold key or sponge to neck; if these be not successful, plugging of nostrils with lint soaked in tincture of perchloride of iron or adrenalin.

TONGUE.—Ice to suck; pressure with the fingers; if serious, compression of carotid artery.

FACE OR SCALP.—Direct pressure with fingers or bandage and pad on wound; if bleeding be severe, pressure in addition on facial, temporal, or occipital artery.

NECK.—Pressure on carotid artery.

ARMPIT OR SHOULDER.—Pressure on subclavian artery.

FOREARM.—Pressure on brachial artery by fingers, tourniquet, or forced flexion at elbow.

HAND.—Elevation and direct pressure with pad and bandage; if bleeding severe, pressure on radial and ulnar arteries, or tourniquet to forearm.

THIGH.—Pressure on femoral artery at groin; tourniquet, if low down.

LEG.—Tourniquet to thigh, or forced flexion at knee. In the case of ruptured varicose veins, a pad and bandage round leg extending above and below wound with elevation of limb are enough.

FOOT.—Direct pressure and elevation; if bleeding severe, forced flexion at knee, or pressure on posterior tibial artery.

HÆMORRHOIDS (*see* PILES).

HÆMOSTATICS are any means, whether of the nature of mechanical appliances or drugs, used to control bleeding. (*See* HÆMORRHAGE.)

HAIR DISEASES (*see* BALDNESS, SKIN DISEASES).

HAIR, REMOVAL OF (*see* DEPILATION).

HALLUCINATIONS are errors in

HAND

perception, affecting some sense organ to such an extent that a person imagines he perceives something for which there is no foundation.

HAMMER TOE (*see* CORNS AND BUNIONS).

HAMSTRINGS is the name given to the tendons at the back of the knee, two on the inner side and one on the outer side, which bend this joint.

HAND is the section of the upper limb below the wrist.

In structure, the hand has a bony basis of eight small 'carpal' bones in the wrist, five metacarpal bones in the fleshy part of the hand, and three phalanges in each finger, two only in the thumb. From the muscles of the forearm run in front of the wrist twelve strong tendons or sinews. Of these, nine go to the fingers and thumb and are bound down by a strong band, the 'annular ligament', in front of the wrist. They are enclosed in a complicated 'synovial' sheath, and pass through the palm and down the fingers. (*See* FINGER.) Behind the wrist twelve tendons likewise cross from forearm to hand.

Forming the ball of the thumb and that of the little finger, and filling up the gaps between the metacarpal bones, are other muscles, which act to separate and bring together the fingers, and to bend them at their first joints (knuckles).

Deep in the palm, the ulnar artery makes an arch across the hand, giving off branches which run down the sides of the fingers; while the radial artery makes an arch across at a still deeper level, lying in close contact with the bones.

Swellings on the back or front of the wrist are usually due to collection of fluid in the tendon sheaths. (*See* GANGLION.) Deep abscesses on the front of the fingers are serious, because of the ease with which the infection spreads up the synovial sheaths of the tendons into the palm

HANG-NAIL

of the hand. (*See* WHITLOW.) A condition in which the fingers, especially the ring and little fingers, are gradually drawn up into the palm follows sometimes on a severe strain of the palm or long-continued pressure of a tool.

HANG-NAIL means a splitting of the skin at the side of the finger-nail. It is often a painful condition and difficult to heal. This is best effected by wearing a wet boracic dressing covered by a rubber finger-stall constantly for several days.

HARDNESS is a term applied to water that contains a large amount of calcium and magnesium salts (lime salts) which form an insoluble curd with soap and thus interfere with the use of the water for purposes of washing. Hard water is especially found in districts where the soil is chalky. The same salts have a strongly astringent action when the water is drunk, and thus produce constipation and other troubles. Temporary hardness, which is due to the presence of bicarbonates of lime, can be remedied by boiling, when the lime is precipitated as carbonate of lime. Permanent hardness is not remedied by boiling, and is due to the presence of a large amount of sulphate of lime.

HARE-LIP (*see* PALATE, MALFORMATIONS OF).

HARTSHORN is a popular name for ammonia. (*See* AMMONIA.)

HAUNCH-BONE is the name of the bone which encloses the lower part of the abdomen on each side. (*See* PELVIS.)

HAY FEVER, otherwise known as HAY ASTHMA, SUMMER CATARRH, and in America as AUTUMN CATARRH, means a peculiar inflammatory condition of the mucous membranes of the eyes, nose, and air passages, which year after year affects certain individuals from the middle of May till the end of July, and in America is also troublesome during the latter part of August and September. It has

HAY-FEVER

a close connection with one type of asthma.

The popular idea, which has long attributed attacks of hay fever to the pollen from hay-fields, has been shown to be correct, though behind this there must be some predisposing constitutional sensitiveness that renders some persons liable to attacks while the majority of people are quite immune.

Symptoms.—The malady recurs with regularity during the summer months in those susceptible to it. It begins with an itching of the eyes and nose, followed by symptoms of a severe cold, such as headache, violent sneezing, and profuse watery discharge from the eyes and nose, together with dry, hard cough, and occasionally severe asthmatic paroxysms. The attack usually runs a course of several weeks, and, in addition to making the person miserable, or even incapacitating him for work while they last, repeated attacks may lay the foundation for serious chest disease. If rainy weather come on, the symptoms may abate. A railway journey through a country district in the heat of summer seems specially apt to be followed by a bad attack.

Treatment.—The most effectual method of treatment in hay fever is to avoid the exciting cause, namely, the neighbourhood of grass fields, during the summer season. Removal to the seaside often succeeds in putting an end to an attack, and many persons who are liable to the complaint make such a change annually before its expected onset, and thus escape. For those who are unable to accomplish this, the interior of the nose may be sprayed or painted with weak adrenalin solution. In cases complicated by hay asthma, the remedies for ordinary bronchial asthma are applicable. (*See* ASTHMA.) In cases where there is some nasal defect, cauterisation of the turbinate process or an operation to straighten

HAZELINE

a distorted nasal septum sometimes affords a certain measure of relief.

Susceptible persons living in the country should sleep with their bedroom windows shut; and it has been found that the application to the eye or nose, every morning, of antitoxin (known as *Pollantin*), will in many cases prevent attacks.

HAZELINE (*see* WITCH-HAZEL).

HEAD (*see* BRAIN, FACE, SKULL, and SCALP).

HEADACHE is a condition of great importance, because it not only appears in very varied types of persons from many different causes, but it sometimes is so constant or so severe as to occasion great distress and interference with the ordinary duties of life. In children particularly, recurring headache should not be lightly regarded, because it may, on the one hand, be the first symptom of some serious organic disease, or, on the other hand, its cause may be one which at this early stage is easily removed, as, for example, by wearing suitable spectacles. Headache is oftenest due to some condition of the brain, and the great fluctuations in size and amount of contained blood which the vessels of the brain constantly undergo, coupled with the fact that the rigid skull allows only very slight changes in the volume of its contents, bulk very largely in the cause of many headaches.

NERVOUS HEADACHE is one of the most severe types. It affects, in general, persons of a nervous temperament in whose family various nervous diseases, like epilepsy, hysteria, neurasthenia, are found, and is apt to occur at times when the general health is poor, when the mind has been occupied by severe business worry, or brooding over some unpleasant thought. These headaches are also associated with the hurry and noise of town life, disappearing quickly on a change to country residence, and in many people they appear to depend upon electrical

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changes of the atmosphere. In women, severe nervous headache associated with pains and flushings in various parts of the body may be a sign of the approach of the climacteric. *Clavus*, a pain as of a nail being bored into some part of the head, is one form taken by nervous headache, generally attributed to neuralgia. (*See* NEURALGIA.) *Migraine* is a very severe variety, which affects particularly women and men of high intellectuality. An attack of migraine begins in some people with a bright spot seen in one corner of the field of vision, and rapidly spreading across it, so that the sight becomes partially obscured; this spot may spread by bright flashes. This temporary defect of vision is very characteristic of migraine, but it may be absent, and in its place great nausea and vomiting may come on, after which the headache appears and becomes gradually worse. The headache shows all degrees of severity up to a state of great collapse. Vomiting and a constant feeling of sickness are generally very marked, and the presence of these symptoms has gained for this type the name also of *Sick Headache*. The whole is over in a day or two days in general, but severe cases may last a week. Attacks may be repeated at intervals of months or years, ceasing as a rule entirely between fifty and sixty.

Treatment.—As this form of headache depends to a large extent upon debility, it is essential that the sufferer should, between his attacks, have light, nourishing diet, should take a full allowance of sleep, and should, as far as possible, avoid the forms of worry and mental strain which he finds bring on the headache. The tonics usually prescribed for these persons consist, amongst others, of arsenic, cod-liver oil, and quinine.

ANÆMIC HEADACHE occurs in girls and others who suffer from general anaemia; in persons who have any form of heart disease, which pre-

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vents the brain from getting its full supply of blood ; in the subjects of Bright's disease ; and, above all, in old people whose arteries are thick-walled and narrow, and in whom the headache comes on especially at night in association with insomnia. This type of headache is generally in the back of or right on the top of the head, and is very often worse when the sufferer stands or walks about, but relieved when he lies down.

The special symptoms of this headache are depression of spirits, irritability of temper, timid fear of events not likely to happen, sometimes sleeplessness, but sometimes also drowsiness during the day, when the person should be awake, and very often coldness of the hands and feet with pallor of the face. There is, for persons subject to this type of headache, a great liability to contract the alcoholic habit, because alcohol gives great temporary relief.

Treatment.—Iron and good food are necessary in some cases, cardiac stimulants in those where the heart is feeble. In other persons the stoppage of any weakening discharge which may be present, and in old people the use of small quantities of alcohol, especially at night, forms the requisite treatment.

CONGESTIVE HEADACHE is one of the most painful forms, and is generally accompanied by flushing of the face and throbbing in the vessels of the head and neck. It is sometimes closely associated with the nervous type, occurring in hard and constant brain-workers, who eat irregularly, and particularly in those who are too much addicted to the use of alcohol. Not infrequently it is allied in these cases with gout, and may be associated with an unduly high blood-pressure.

Treatment.—If the person takes alcohol to any extent, this should be abandoned entirely. Coffee, tea, and similar stimulants should be sparingly taken. The diet should be a light one,

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of fish, white meat, puddings, and fruit ; and it is important to keep the action of the bowels regular, as by taking some aperient water every morning. Bromides and chloral are useful when the headache is combined with sleeplessness. In very severe cases, cloths wrung out of iced water applied to the head and renewed every two or three minutes, or ice-bags to the head often give great relief.

RHEUMATIC HEADACHE usually affects the scalp, in consequence of exposure of the uncovered head to cold. It has this peculiarity, that the scalp is extremely tender, and brushing the hair may cause such pain that women may have to leave the hair undone. It is treated by wearing some woollen covering round the head, and by taking various anti-rheumatic remedies, such as salicylate of soda or aspirin.

ORGANIC HEADACHE includes pains of various nature and in various parts of the head, due to some gross change in the substance of the brain or its coverings. Meningitis in children is one of the chief of these. In old people, thickening of the arteries of the brain, softening of the brain, or apoplexy, may produce constant dull headache. Tumors of the brain produce pain associated with giddiness and apparently causeless vomiting.

HEALING (*see* WOUNDS).

HEALTH.—The state of health implies much more than freedom from disease, and good health may be defined as the attainment and maintenance of the highest state of mental and bodily vigour of which any given individual is capable. People vary in the degree of strength and activity to which they are capable of attaining, and some persons must be content with leading a life on a lower plane of physical or mental activity than others. For the maintenance of this individual standard it is essential that each person should recognise his capabilities and limitations, and also that

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he should be aware of any defects of body or mind to which he is liable, either as the result of heredity or of previous disease. The recognition of and allowance for these in the conduct of daily life is of immense importance in maintaining health in other respects. Many persons have some inborn hereditary defect or tendency, *e.g.* a nervous temperament or a liability to disease of some special organ of the body, such as the heart or lungs, and the maintenance of health in such persons should be particularly directed towards avoiding conditions which lead to disorder common in their family. (*See HEART DISEASES, LUNG DISEASES, etc.*) Persons with a tendency to consumption, for example, have in numerous instances by care in regard to the general conduct of life and place of residence attained a fair measure of general health and been able for many years to conduct a quiet but strenuous life of high productivity.

Environment is another matter with a very important bearing upon health. This involves such considerations as the choice of an occupation suited to the individual's capabilities and temperament and the avoidance in dangerous occupations of the influences which are specially hurtful to health. (*See TRADE DISEASES.*) The social surroundings also play a very important part with many persons in the development of nervous affections. (*See NEURASTHENIA.*)

Speaking generally, it may be said that the great majority of persons, long before middle life is reached, have contracted some defect of body or constitution arising from their surroundings, and the maintenance of health depends largely upon making appropriate allowance for this.

The care of the health should begin with the earliest life, and as infants are more prejudicially affected by improper feeding than by any other influence, the care of the child in this respect is of the greatest importance.

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(*See INFANT-FEEDING.*) Children display at an early age peculiarities and tendencies which, if unchecked, sometimes develop into undesirable habits, and these form a matter for careful education. (*See CHILDREN, PECULIARITIES OF; SCHOOL CHILDREN; and MENTAL DEFECTIVENESS.*)

At a later stage the most important factor in the due care of body and mind consists in attention to the natural functions of the body. Of these the question of food that is proper in quality and in amount is one of the most important (*see DIET*). Careful attention to the functions of the bowels (*see CONSTIPATION*) and proper care of the teeth (*see TEETH, CARE OF*) are subjects of the utmost importance in which children especially should be carefully instructed. In regard to the care of the skin and the maintenance of its functions, *see SKIN, BATHS, and CLOTHING*. A due maintenance of the relations between the exercise of the body and the amount of rest is of great importance (*see EXERCISE, FATIGUE, and SLEEP*), while the correction of bad habits in regard to the posture of the body, especially whilst at work, is of immense importance in maintaining good health (*see CHEST DEVELOPMENT and SPINE, DISEASES OF*). Various habits in regard to eating and drinking and the practice of smoking, which has become almost universal, require to be carefully studied in order that due moderation may be exercised in regard to them. (*See CORPULENCE, ALCOHOL, TOBACCO.*)

Despite all the ordinary precautions that may be taken in regard to matters of everyday life, such as those already mentioned, people become, especially in the earlier years of life, exposed to accidents and diseases which may, however, with care be avoided to a large extent. (*See INFECTION.*)

Many persons from middle life onwards make a practice of being medically examined, as if for life insurance,

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at regular yearly intervals or oftener. This is an excellent routine to adopt, for by its means defects in constitution can be discovered at an early stage, while they are still capable of treatment.

HEARING (*see* DEAFNESS, EAR).

HEART is a hollow muscular pump with four cavities, each provided at its outlet with a valve, whose function is to maintain the circulation of the blood. The two upper cavities are known as atria or auricles, the two lower ones as ventricles. Owing to the fact that the heart has important connections with the nervous system, and that its action is liable to be increased or diminished by influences which powerfully affect the latter, the heart was regarded in olden times, and is still spoken of, as the seat of the emotions.

Structure.—The heart lies within a strong fibrous bag, known as the pericardium, and since the inner surface of this bag and the outer surface of the heart are both covered with a smooth, moist, glistening membrane, the movements of the heart are accomplished almost without friction. The main thickness of the heart wall consists of bundles of muscle fibres. Within all the cavities is a smooth lining membrane continuous with that lining the vessels which open into the heart. The outer smooth membrane is known as 'epicardium', the muscular substance as 'myocardium', and the smooth lining membrane as 'endocardium'.

As stated above, there are four valves. The mitral valve consists of two irregular cusps, the tricuspid valve of three smaller cusps. The aortic and pulmonary valves each consist of three semilunar-shaped segments. The structure of a valve is a double layer of the lining membrane of the heart (endocardium) strengthened by fibrous tissue between. The 'tricuspid valve' on the right side, and the 'mitral valve' on the left, completely prevent blood from run-

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ning back into the auricles when the ventricles contract. The 'pulmonary valve' and the 'aortic valve' are placed at the entrance to these arteries, and prevent the blood from running back into the ventricles when it has been driven from them into the arteries. The noises made by these valves in closing are known as the 'heart sounds', and can be heard by any one who applies his ear to the front of a person's chest. 'Murmurs' heard accompanying these sounds indicate defects in the valves, and form one of the chief signs of heart disease.

At each heart-beat the two auricles contract and expel their contents into the ventricles, which then contract together, so that the blood is driven into the arteries. The heart beats from sixty to ninety times a minute, the rate in any given healthy person being about four times that of the respirations. The heart is to some extent regulated by a nerve centre in the medulla, closely connected with those centres which govern the lungs and stomach, and nerve-fibres pass to it in the 'vagus' nerve as well as from the sympathetic nervous system.

HEART-BURN means a burning sensation experienced in the region of the heart and up the back to the throat. It is caused by an excessive acidity of the gastric juice, and is relieved temporarily by taking alkaline substances, such as 20 grains of bicarbonate of soda or a similar amount of bismuth carbonate or carbonate of magnesia in water. When it is habitual, it is relieved by having recourse to a light diet with little animal food and by drinking water regularly an hour or two after meals.

HEART DISEASES belong to that class of diseases which can be recognised only by the trained observer, though their presence may occasion severe symptoms and signs of general illness perceptible to every one. Their treatment, and a true apprecia-

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tion of their slightness or gravity, belongs still more to the department of the specialist.

Varieties.—Many general diseases affect the heart ; but, considering the arduous work which this organ constantly performs, and the fact that it never rests completely from the time of its formation till death ensues, it is subject to wonderfully few disorders. Its diseases are classified according to the part of the heart affected, or the nature of the changes produced. *Inflammatory affections* are divided into pericarditis, myocarditis, and endocarditis, according as the pericardium or enveloping membrane, the myocardium or muscular substance, and the endocardium or lining membrane are affected. *Valvular diseases* form one of the most important groups, for defects in these structures have a serious effect on the circulation. *Hypertrophy*, in which the heart is enlarged and its wall thickened, and *dilatation*, in which one or more of the cavities is dilated, form another group often associated with the valvular diseases. *Degeneration* of the muscular tissue, producing enfeeblement of the heart's action, may take place, either in the direction of a 'fatty' or, less commonly, of a fibroid change. Finally, there is a class of *functional* disorders in which—with or without apparent diseased change in the structure of the heart—palpitation, irregularity, rapidity, slowness, or even severe attacks of pain appear.

General symptoms.—The heart possesses a remarkable power, known as 'compensation', by which it adapts itself to new conditions. Thus if a person takes up some more arduous employment than usual the heart beats more powerfully and becomes larger, in order to overtake the extra strain ; and in a similar way, disease in one part of the organ, such as a valve, may be so compensated that not only do no symptoms arise, but the person may pass through a long

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life without suspecting the existence of any such defect. The establishment of this 'compensation' is one of the chief objects of the gradual training which is necessary before undertaking any strenuous athletic exercise.

It is a common mistake to suppose that disease of the heart ends always in sudden death, for only disease of the aortic valve and degeneration of the heart-muscle are associated with this accident, which even in these conditions is infrequent. If, however, the defect be so great that it cannot be remedied by 'compensation', or if general ill-health or the debility of age come on, the pumping power of the heart weakens and symptoms appear, some of which are referable to the organs in which the circulation is defective, others, like pain and palpitation, to the heart itself. For example, breathlessness and lividity are due to bad circulation in the lungs ; faintness and giddiness to want of blood in the brain ; dyspepsia, swelling of the abdomen, and dropsy of the feet, to impeded circulation in the veins of the lower part of the body.

Individual Diseases :

PERICARDITIS is an inflammation of the membrane covering the exterior of the heart. It sometimes arises in connection with an attack of rheumatic fever, and a large amount of fluid may collect in the pericardial sac. This usually ends in recovery, but may take many months to do so.

ENDOCARDITIS is an inflammatory condition of the membrane lining the heart, and since the part most subjected to friction and strain is that covering the valves, so these valves are the most commonly affected parts, those on the left side of the heart (mitral and aortic valves) being affected much more frequently than those on the right side. Little can be done for the condition beyond especial rest prolonged for several

months, quiet, and the application of an ice-bag over the region of the heart.

CHRONIC VALVULAR DISEASES form the most frequent and most important group of heart disorders. Although, in consequence of the power of 'compensation' already mentioned, the heart may become more powerful and so neutralise the ill effects of a narrowed or leaking valve, it is not possible to predict how far this change will be affected by ill-health or the strain of a laborious life, and consequently the detection of valvular disease unfits a person for entrance upon any public service, and renders him subject, if he becomes a candidate for life assurance, either to refusal or to a heavily increased premium. By far the most common cause of valvular disease is endocarditis, which, instead of passing off with the disease that produced it, has become chronic, leading ultimately either to thickening and contraction of the valves, so that they become unable to close their respective openings, or to adhesion of the segments of the valves to one another at their margins, so that the opening is very much narrowed. The former condition is known as 'incompetence', the latter as 'stenosis', and the two are found either separately, or together affecting the same valve. The valves on the left side of the heart are more frequently affected than those on the right side, in the proportion of about 18 to 1.

Of all the valvular defects, incompetence of the aortic valve is the most serious, and next to it in importance comes stenosis of the mitral opening.

Treatment of valvular diseases.—When a valve defect is accidentally discovered, even though it be perfectly compensated and give rise to no symptoms, it is well that the person should take certain precautions in his daily life, and he should therefore, unless of a peculiarly nervous and highly strung tempera-

ment, be informed by his medical adviser of the condition found in his heart. The subject of such disease must lead a quiet and well-regulated life, avoiding, as far as may be, excitement, worry, and sudden strains, though methodical attention to business, and even hard, steady work, are quite well borne.

When compensation begins to fail—and frequently this does not take place till the approach of old age—the symptoms already mentioned appear, but, in early stages, rest may be the only remedy required. Various stimulants and tonics for the heart exist, of which the chief are digitalis, strophanthus, and strychnine. Many persons, by taking one of these drugs periodically (*e.g.* digitalis) and living a carefully regulated life, manage to keep in check all the symptoms of a serious valve defect, and to live a busy, useful life. Congestion of the liver, lungs, and kidneys, if these appear, are treated by purgation, cupping, or even blood-letting, according to circumstances. For dropsy in advanced cases tapping of the legs, abdomen, or chest has often to be practised. For breathlessness, the patient must often remain in the sitting posture night and day, and it is then very important that a comfortable bed-rest should be provided. Pain about the heart is not very common, but, when it occurs, is relieved by careful attention to the diet, so as to prevent dyspepsia, and by courses of iodide of potassium or nitro-glycerin. Spitting of blood, when it occurs, is not very copious, and is rather beneficial than otherwise, so that it does not call for treatment. Sleeplessness is often a very distressing symptom of aortic disease, and is frequently relieved by a teaspoonful or more of compound spirit of ether or of paraldehyde.

ENLARGEMENT OF THE HEART is of two types, dilatation of the cavities with **HYPERTROPHY** of the

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walls, and DILATATION with thinning of the walls. The first takes place as the result of simple constant strain, as in professional runners and other athletes. It also arises in consequence of the increased difficulty in the circulation that results from a diseased valve, and it produces 'compensation' of the valvular disease. It also arises in consequence of high blood-pressure produced by Bright's disease. DILATATION of the heart, with thinning of its walls, is always a bad thing, leading to feeble action of the organ. It occurs as the result of strain when persons not in 'training' run a hard race. It takes place, too, in persons who are bloodless and subjected to over-hard work, and it very often occurs to a slight extent after a severe fever. Sometimes it occurs suddenly, the heart becomes unable to contract upon the blood which accumulates in it, and death results in a few minutes or hours, in consequence of some special effort by a feeble person, or in consequence of injudicious exercise too soon during convalescence from a fever.

DEGENERATION OF THE HEART occurs principally in elderly people, the most common form being a change of the muscle fibres, in scattered patches, into fat (*fatty heart*). In another form of degeneration a deposition of fibrous tissue gradually takes place between the muscle fibres, which at the same time waste away (*fibroid heart*).

FUNCTIONAL AFFECTIONS. — Several varieties of unusual action of the heart are recognised. Many troublesome irregularities of the heart are now known to be caused by defective action of the muscular connections. The site of these defects can be analysed by means of elaborate modern instruments.

DISORDERED ACTION OF THE HEART is a condition which covers a number of varieties of irregular action, especially a form which occurs in young persons and is accompanied by short-

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ness of breath, rapid and sometimes irregular action of the heart, and depression and irritability of temper. It is often aggravated by smoking and by dyspepsia, and it may pass into a condition of neurasthenia. The most useful treatment for this condition is a temporary cessation of exercise, with rest, and bromide of sodium in 5-grain doses three times daily.

PALPITATION is a condition in which the heart beats fast and the person becomes conscious of its beating. (See **PALPITATION**.)

ANGINA PECTORIS is a serious condition in which extreme pain and a sense of impending death are due to spasm of the heart. (See **ANGINA PECTORIS**.)

AURICULAR FIBRILLATION is the commonest form of persistent irregularity of the heart's action, accounting for about one-half of all the cases of irregular pulse. It usually accompanies disease of the mitral valve, and is recognised by great irregularity in time and force of the pulse, visible pulsations in the veins of the neck, and various other signs.

EXTRA-SYSTOLES form a common cause of irregular action in irritable states of the heart; the extra-systole is a premature beat followed by a pause of the heart for rest. It causes a sensation as if the heart were turning over. This is not a serious form of disorder, and it may come and go for many years in certain individuals.

HEART-BLOCK is a serious condition in which the conducting mechanism between auricle and ventricle is impaired (incomplete heart-block) or destroyed (complete heart-block). It leads to great slowing of the pulse.

ALTERNATING PULSE is a condition in which there are regularly alternating strong and weak beats of the heart, forming a persistent type of irregularity, which is caused by degeneration of the heart-muscle. It is sometimes found in old age, and is of serious import.

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RAPID HEART with a pulse considerably above 100 per minute is often found as the result of enfeeblement of the heart-muscle following fevers, and some other conditions such as exophthalmic goitre.

SLOW HEART is a natural peculiarity with some persons, the heart beating only forty, fifty, or sixty times per minute instead of the normal seventy or eighty times. Such individuals are usually slow in all their actions.

HEAT.—The prejudicial effects of excessive heat are treated under **BURNS** and **SUNSTROKE**. The curative uses of heat as applied by hot water and hot air are mentioned under **BATHS**. Hot-air applications are much used in the treatment of rheumatic conditions in the joints and muscles, and a more powerful application of heat for the same purpose is obtained by the use of high frequency electricity (*see* **DIATHERMY**). Excessive heat, in the form of the cautery, is also used in order to destroy diseased tissues.

HEAT SPOTS is a vague term applied to small inflamed and congested areas which appear especially upon the skin of the face, neck, and chest or other parts of the body in warm weather.

Treatment.—The skin may be powdered with a dusting-powder consisting of boracic acid, starch, and talc in equal parts. In the case of the small pimples about the face, these may be touched with strong spirit, *e.g.* eau-de-Cologne, or with tincture of iodine, which is applied at night and washed off in the morning. In the case of the vesicles about the mouth, it is best either to leave these alone or simply to apply dusting-powder, but, if they are spreading, weak ammoniated mercury ointment may be applied night and morning. In the case of the large spots of nettlerash, the digestion is usually at fault, and the appearance of the spots is often preceded by eating too much meat or some indigestible article such

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as oatmeal cakes or pastry. In hot weather especially, fruit and vegetables may, with advantage, be largely substituted for such food. An aperient may be necessary, such as rhubarb powder taken every night.

HECTIC is a type of fever with great daily rise and fall of temperature which comes on late in the course of consumption and some other diseases.

HEEL is the hinder part of the foot formed by the calcaneum and the specially thick skin covering it. It is not subject to many diseases. Severe pain in the heel is sometimes a sign of gout or rheumatism. Abrasions, due to friction of the boot in walking, frequently form on the back of the heel. They are best treated by painting with tincture of iodine. Corns occasionally form on the heel. (*See* **CORNS**.)

HEIGHT (*see* **WEIGHT AND HEIGHT**).

HELIO THERAPY is a term applied to treatment of disease by exposing the body to the sun's rays. This form of treatment by sun bath has been greatly used in recent times for the cure of tuberculosis and wasting diseases in general. (*See* **LIGHT TREATMENT**.)

HEMIANOPIA, **HEMIANOPSIA**, and **HEMIOPIA** are terms meaning loss of half the usual area of vision.

HEMIPLEGIA means paralysis limited to one side of the body. (*See* **PARALYSIS**.)

HEMLOCK, or **CONIUM**, is a poisonous wayside weed of which the juice causes paralysis and acts as a narcotic poison. If the leaves or fruit have been eaten, an emetic should be given followed by strong tea or coffee.

HENBANE (*see* **HYOSCYAMUS**).

HEPATITIS means inflammation of the liver.

HEREDITY is a term indicating the principle on which various peculiarities of bodily form or structure, or of physical or mental activity are transmitted from parents to offspring, and so handed down through a family stock.

HERNIA

HERNIA means the protrusion of any organ, or part of an organ, into or through the wall of the cavity which contains it. As a rule, the name is applied only to hernia of the bowel, the popular term for which is 'rupture'.

Varieties.—There are certain natural openings in the region of the groin on either side; one known as the 'inguinal canal', through which the testicle descends in early life, and which the spermatic cord keeps always more or less open; the other, known as the 'crural canal', which lies to the inner side of the large femoral vessels that pass from the abdomen to the thigh. A hernia emerging from the former is known as an *inguinal hernia*, and tends to descend along the spermatic cord into the scrotum. This is more common in men. A hernia emerging through the crural canal comes forwards on the front of the thigh, and is called a *femoral hernia*. This is more frequent in women. A weak spot exists in the centre of the abdomen at the navel, and here, not infrequently in young children of poor development, a hernia may appear, which is then known as an *umbilical hernia*. A hernia which protrudes at some accidental opening on the abdomen, as, for example, through the scar of an operation wound, is known as a *ventral hernia*.

A very important classification of hernia is made according to the condition of the protruding organ. A *reducible hernia* is one which is so freely movable that it may be pressed back into the abdomen, though it comes down again by the same opening unless this be blocked up. An *irreducible hernia*, on the other hand, is one which cannot be returned, either because it has become adherent to its new surroundings, because it has enlarged after emerging, because much fat has been deposited inside the abdomen, or for some similar reason. A *strangulated hernia* is by far the most important variety, because of its immediate

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danger to life. In this form, the circulation of blood in the protruded bowel becomes cut off by the margin of the opening through which the loop of bowel has passed; and, if an operation be not immediately performed for its relief, the bowel will become gangrenous, and the patient will die within a few days. The great danger attending all forms of hernia is that they may at any time become 'strangulated'.

Symptoms.—In the great majority of cases, the hernia consists of one or more loops of the small intestine, and, if the hernia be of small size and readily reducible, the symptoms are somewhat as follows. If the hernia be produced quite suddenly, as during the lifting of a heavy weight, the person affected may hear or feel a distant crack, and be conscious that something has given way, but, as a rule, suffers no sharp pain. More usually the hernia develops gradually over several years, and the symptoms have then no definite onset, but simply increase till they attract attention. An undefinable sense of weakness, and occasionally pain, are felt in the region of the hernia. When any great effort is made, such as coughing, or straining at stool, or lifting a weight, a swelling appears with a gurgling feeling at the seat of the hernia, though this can be made to disappear by pressure when the person lies down. Even if the hernia does not come far down, a distinct impulse on coughing is communicated to the hand laid upon the swelling, which is situated usually at the inner end of the groin. When the hernia has become irreducible, the swelling does not vary in size, but the impulse on coughing is still to be felt. The presence, even of a small hernia, generally occasions some interference with digestion, and constipation is a common accompaniment. A dragging sensation in the back is also another frequent symptom.

When a hernia becomes 'strangu-

HEROIN

lated', as the result of stoppage of its circulation by the pressure of the margin of the ring through which it comes, a very marked set of symptoms ensues. The hernia first inflames, becoming acutely painful, and then before many hours have passed turns gangrenous, producing general peritonitis and death, if not relieved. At the same time, all passage of contents through the bowel is stopped, and, as a result, the bowels do not move, but vomiting occurs. The onset of abdominal pain, accompanied by stoppage of the bowels and vomiting in a person possessed of a hernia, forms an ominous sign, and calls for immediate examination of the region of the groin by an expert medical practitioner, and probably for operation.

Treatment.—When a hernia is present, it may be treated in a palliative manner, so as to relieve unpleasant symptoms and diminish the risk of strangulation, or an attempt may be made to cure it altogether.

PALLIATIVE TREATMENT.—If the hernia be reducible, it is pushed back through the opening into the abdomen, and is then retained by an artificial support known as a 'truss'. (See TRUSS.)

CURATIVE TREATMENT.—The danger of strangulation, involving an immediate operation with great risk to life, is present so long as a hernia exists, and, except in young people whose hernia is very small and who can attempt its cure by a truss, or in old people with a very wide opening, the chance of complete cure offered by an operation deserves to be carefully considered. The operation, known as the 'radical cure', consists in closing up the opening, and is not in itself a dangerous one. The period of enforced idleness consequent on it amounts only to a few weeks.

When a hernia becomes strangulated, an operation becomes urgently necessary.

HEROIN, also known as DIAMORPHINE HYDROCHLORIDE and DIA-

HERPES

CETYLMORPHINE HYDROCHLORIDE, is a white crystalline powder of slightly bitter taste derived from morphine. It is much used as a mild soporific and for its special action in quieting excessive coughing in cases of chronic bronchitis and consumption. The dose is from $\frac{1}{2}$ to $\frac{1}{8}$ grain.

HERPES, or SHINGLES, is a skin eruption of acute nature, consisting in the appearance of small yellow vesicles, which spread over a greater or less area, dry up, and heal by scabbing.

Symptoms.—The first symptoms of herpes are much like those of any feverish attack. The person feels unwell for some days, has a slight rise of temperature, and vague pain in the side or in various other parts. The pain finally settles at a point in the side, and, two or three days after the first symptoms, the rash appears. Minute yellow blebs are seen on the skin of the back, of the side, or of the front of the chest, or simultaneously on all three, the points corresponding to the space between two ribs right round one side. These blebs increase in number for some days, and spread till there is often a complete half girdle round one side of the chest. The pain in this stage is severe, but it appears to vary a good deal with age, being slight in children and very severe in old people, in whom indeed herpes sometimes forms a serious malady. After one or two weeks, most of the vesicles have dried up and formed scabs, which finally drop off, leaving the skin just as it was before, or covered with small scars.

Treatment.—If any cause for an attack of herpes be known, it should be removed. Thus, if the affected person be in poor health, tonics are necessary; if he be of rheumatic constitution, salicylate of soda, and so on. In the very early stage, before the vesicles have formed, cocaine or atropine ointment rubbed into the side eases the pain and seems to

HEXAMINE

prevent to some extent the outbreak of the eruption. Later, when the vesicles have formed and are discharging, a dusting-powder of starch, zinc oxide, and bismuth subnitrate gives much relief, or the side may be painted with glycerin jelly containing menthol or with a mixture of chloral, camphor, and menthol in equal parts. In any case the part should be kept warm by a dressing of cotton-wool.

HEXAMINE, also known as **URO-TROPIN**, is a substance given in cases of cystitis when the urine decomposes within the bladder, and it exerts its beneficial action very speedily. It acts only in urine with an acid reaction, and, if the urine be alkaline, acid phosphate of soda is usually taken along with the urotropin. The dose of each of these is 5 or 10 grains several times daily.

HICCOUGH is a spasmodic indrawing of air to the lungs, ending with a click, due to sudden closure of the vocal cords. The cause is some irritation of the nerves which go to the diaphragm, producing sudden contractions of the latter.

Treatment.—If the condition be due to dyspepsia, it is often relieved by a copious draught of cold water or by some aromatic like a few drops of spirit of chloroform, or a tablespoonful of peppermint water or cinnamon water. When continuous and excessive it is usually controlled by bromides.

HIP-JOINT is the joint formed by the head of the thigh-bone and the deep cup-shaped hollow on the side of the pelvis which receives it (acetabulum). The joint is of the ball-and-socket variety, is dislocated only by very great violence, and is correspondingly difficult to reduce to its natural state after dislocation.

For Hip-joint Disease see under **JOINTS, DISEASES OF**.

HIVES is a popular term applied to eruptions of the nature of nettle-rash.

HODGKIN'S DISEASE, or **LYMPH-ADENOMA**, is a condition in which the

HOOKWORM

lymphatic glands all over the body undergo a gradually progressive enlargement. The cause is not known, though in some cases there seems to have been a local source of irritation in the neighbourhood of the glands first affected. Thus it may start with enlargement of the glands in the neck, and this may in its turn have been originated by the presence of a bad tooth. The glands affected may reach a great size, and also glandular tissue forms in various organs all over the body. Along with these changes a considerable degree of anæmia arises, and the affected person becomes gradually weaker. The disease may extend over several years, but seems to be very little influenced by treatment. Arsenic appears to have more effect in retarding it than any other drug has. Removal of affected glands by surgical means has been tried but found useless in checking the enlargement of others. The application of X-rays or radium to the masses of enlarged glands has a remarkable though temporary effect in diminishing their size.

HOMŒOPATHY is a system of medicine founded by Hahnemann at the end of the eighteenth century. It is based upon the theory that diseases are curable by those drugs which produce effects on the body similar to symptoms caused by the disease (*similia similibus curantur*). In administering drugs, the theory is also held that their effect is increased by giving them in minute doses obtained by diluting them to an extreme degree. This system, which obtained many adherents in the earlier part of the nineteenth century, has in recent years had few followers.

HONEY is used in medicine mixed with water for a gargle to relieve dryness of the mouth and throat. Honey of borax is used to wipe the tongue and gums of children suffering from thrush.

HOOKWORM is another name for

HOOPING-COUGH

the ankylostoma or uncinaria. (See WORMS.)

HOOPING-COUGH (see WHOOPING-COUGH).

HOPS are used in medicine as the powder got from the dried fruit, which has a mildly sedative action. A poultice made from crushed hops is a favourite household sedative in cases of localised pains, and hop pillows of dried hops are greatly used for nervous insomnia, though probably the effect is largely imaginary.

HORDEOLUM is another name for styne.

HOREHOUND is the name for the dried leaves and tops of the white horehound plant. It is used for coughs, either in powder or mixed with sugar, or as fluid extract in doses of 1 to 2 drams.

HORMONES are substances which on absorption into the blood influence the action of tissues and organs other than those in which they are produced. The internal secretions of the ovary, pancreas, thyroid, pituitary and suprarenal bodies afford examples of this action.

HOUSEMAID'S KNEE (see BUR-SITIS) is an inflammatory condition of the bursa in front of the knee-cap, often mistaken for some disease in the joint itself.

HOUSES and BUILDING SITES (see SANITATION).

HUMERUS is the bone of the upper arm.

HUMOUR is a term applied to any fluid or semifluid tissue of the body, *e.g.* the aqueous and vitreous humours in the eye.

HUNGER is the term applied to a craving for food or other substance necessary to bodily activity. Hunger for food is supposed to be directly produced by the secretion of small quantities of acid gastric juice which irritate the stomach when it contains no food to absorb the juice secreted. (See also THIRST.) **AIR HUNGER** is an instinctive craving for oxygen resulting in breathlessness, either when a

HYDROCEPHALUS

person ascends to great heights where the pressure of air is low, or in some diseases such as pneumonia and diabetes. **SALT HUNGER** is a similar craving for salt in cases where the chlorides in the blood have fallen too low. Many depraved conditions of appetite are probably due to similar instinctive feelings.

HYDATID is a cyst produced by the growth of immature forms of a tapeworm. (See WORMS.)

HYDRARGYRUM is another name for mercury.

HYDROCELE is a collection of fluid connected with the testicle or spermatic cord, due to some inflammatory process of the sac in which these structures are enclosed. It develops, usually in middle life, though it may appear at any time, increases gradually in size, and is devoid of pain. The condition presents some resemblance to hernia, and, though the impulse on coughing and the gurgling movements associated with the latter are absent in a case of hydrocele, there is occasionally some doubt in distinguishing between them, particularly when the hydrocele communicates with the abdominal cavity by an opening through which the fluid can be forced from one to the other. In children, the application of counter-irritation to the skin covering the hydrocele is often enough to bring about the absorption of the fluid. In older people, some operative procedure is necessary, such as puncture, injection of iodine, or removal of the sac.

HYDROCEPHALUS is a term applied to two quite different forms of disease of the brain, both of which are attended with the effusion of fluid into its cavities. These are named *acute* and *chronic hydrocephalus*.

ACUTE HYDROCEPHALUS was the name formerly used to describe the disease now generally known as tubercular meningitis. (See MENINGITIS.)

CHRONIC HYDROCEPHALUS is a different form of disease, depending

HYDROCHLORIC ACID

on chronic inflammatory changes affecting the membranes and causing retention of the cerebro-spinal fluid secreted within the brain with great increase in the size of the head.

HYDROCHLORIC ACID is a gas which, dissolved in water, forms a clear, colourless fluid of sour taste and smell. It is present in the gastric juice to the extent of 2 parts in 1000. In large quantities it is a corrosive poison.

Its chief use is in cases where the gastric juice is deficient, for example, in alcoholic catarrh of the stomach, in gastric cancer, and in some other forms of indigestion. Dilute hydrochloric acid is generally given along with a bitter infusion in doses of 10 or 20 drops.

HYDROGEN PEROXIDE (*see* PEROXIDE OF HYDROGEN).

HYDRONEPHROSIS is a chronic disease in which the kidney becomes greatly distended with fluid. It is due to some blockage of the ureter connecting the kidney with the bladder. The two chief causes of this are the lodgment in the ureter of a stone formed in the kidney, and kinking of the ureter in consequence of a 'floating' condition of the kidney.

HYDROPATHY, or **HYDROTHERAPEUTICS**, is the name for all those curative measures in which water is the agent employed. (*See* BATHS, DOUCHES, FOMENTATIONS, WET PACK.)

HYDROPHOBIA is an acute and very fatal disease which affects the lower animals, particularly carnivora, and may be communicated from them to man. In animals it is known as 'Rabies'. The disease has been eradicated in Great Britain.

HYDROPS is another name for dropsy.

HYDROTHERAPY (*see* HYDROPATHY).

HYDROTHORAX means a collection of dropsical fluid in the pleural cavities

HYPERTROPHY

HYGIENE means the science of preserving health. (*See* BATHS, CLOTHING, DIET, EXERCISE, HEALTH, SANITATION, VENTILATION.)

HYOSCYAMUS, or **HENBANE**, is a plant that grows commonly in the United States and in Europe. The preparations are made from the leaves, and have an effect in quieting pain and relieving spasm. In large quantities it is a narcotic poison.

In all spasmodic and painful conditions, particularly in colic and in irritable states of the bladder, the tincture of hyoscyamus is used with good effect. Hyoscine, an alkaloid obtained from hyoscyamus, is much used in very small doses in some nervous diseases, *e.g.* shaking palsy. It has also been used recently for the production of 'twilight sleep'.

HYPERCHLORHYDRIA is the term applied to a form of indigestion associated with excessive secretion of hydrochloric acid.

HYPERGLYCÆMIA means excess of sugar in the blood, the condition preceding and accompanying diabetes mellitus.

HYPERMETROPIA, or **HYPEROPIA**, means long-sightedness. (*See* SPECTACLES.)

HYPERPIESIS is a term applied to abnormally high pressure of the blood. The term **HYPERPIESIA** is often applied to the symptoms, such as headache, which result from this raised blood-pressure. (*See* BLOOD-PRESSURE.)

HYPERPLASIA means the abnormal development of some tissue.

HYPERPYREXIA means an excessive degree of fever. (*See* FEVER, TEMPERATURE.)

HYPERTHYROIDISM is a term applied to excessive activity of the thyroid gland, *e.g.* in exophthalmic goitre. The condition is found in a minor degree producing shakiness, nervousness, rapid pulse, and undue tendency to perspiration on slight exertion. (*See* GOITRE.)

HYPERTROPHY means the in-

HYPNOTICS

crease in size which takes place in an organ as the result of an increased amount of work demanded of it by the bodily economy.

HYPNOTICS are measures which produce sleep.

Simple remedies should always receive a fair trial first of all. Thus a person may be kept awake by an overfilled state of the vessels of the brain, due to severe mental labour or worry just before retiring to rest. The activity of the brain continues and sleeplessness results. Some quiet employment for the latter part of the evening, or a light meal may relieve this. Sleeplessness is often due to difficulty of digestion through a heavy meal having been taken shortly before retiring to rest, and this may be relieved by abstaining from the last meal at night. A condition of anæmia of the brain occurs in old men whose arteries are unhealthy, and this also debars sleep, unless the head be kept warm or a small quantity of alcohol be taken at bedtime. Occasionally sleep can be obtained by purely external applications. Massage of the head, the wet pack, and electrical (especially high frequency) applications are all used in different cases. A condition of anæmia and discomfort together, in heart cases, may ward off sleep, though the sick person be very tired, and in such a case one of the best hypnotics is paraldehyde. Other commonly used hypnotics are chloral hydrate, chloralamide, veronal, trional, and sulphonal.

HYPNOTISM is the modern name for the whole class of psychical phenomena, some of which were first produced about a century and a half ago through the process known as mesmerism. The effects are produced by suggestion during a state of partial sleep.

HYPOCHLOROUS ACID is a powerful antiseptic which both kills organisms and neutralises the poisons they produce. It forms the active prin-

HYSTERIA

ciple of the powder known as 'eupad' and of its solution 'eusol'. The powder is produced by mixing equal weights of boric acid and bleaching powder.

HYPOCHONDRIASIS is a chronic mental condition in which the affected person's mind is constantly occupied with a delusion that he is seriously ill. It is especially connected with chronic dyspepsia.

HYPODERMIC administration of drugs is a method now largely employed, both because drugs act much more rapidly when so injected, and because the dose can be calculated with more nicety than when the drugs are given by the mouth and slowly absorbed from the stomach.

HYPOGLYCÆMIA is the term applied to a deficiency of sugar in the blood.

HYPOPHOSPHITES of lime, iron, etc., are often administered in combination as a tonic, especially in cases of incipient phthisis.

HYSTERECTOMY means the operation of removing the uterus. **HYSTERO-OOPHORECTOMY** is the term applied to removal of the uterus and ovaries.

HYSTERIA is a condition or set of conditions which it is difficult to define, because it is not known what changes in the nervous system lie at its root. The condition is also known as **PITHIATISM**, because many of its symptoms appear to be due to auto-suggestion and are readily relieved by suggestion from another person. Hysteria manifests itself by over-action of some parts of the nervous system, or by failure of other parts to perform their necessary work. In consequence, there follow mental changes, convulsive seizures, spasms and contractions of limbs, paralyses, loss of sensation over areas of the body, affections of various internal organs, derangements of joints, and combinations of these which closely mimic various organic diseases. Hysterical manifestations are among the most difficult affections upon which the specialist in nervous

HYSTERIA

disease is called to give an opinion. Although in many cases the element of conscious deception forms one of the mental peculiarities of the trouble, a patient should not rashly be held guilty of shamming illness, and the symptoms should in every case be treated as a real disease.

Treatment.—Special care should be taken in the upbringing of children who come of hysterical family, and they should not, on the one hand, be allowed to work too hard at lessons to the neglect of healthy exercise, nor, on the other hand, should they be pampered and allowed to gratify every passing whim. No hysterical young woman should remain unoccupied, but should be provided with, and forced to do, some congenial work. Needless to say, all the bodily functions should be maintained in the best possible order. In acute hysterical attacks rest and quiet are chiefly necessary. For the minor manifestations of hysteria, the drugs which do most good are valerian and asafœtida. Bromides, which are the special re-

HYSTERIA

medy in epilepsy, appear of little or no use in hysteria. For symptoms such as vomiting, joint affections, loss of sensation, and spasms, removal from home and from the attentions of sympathetic friends to strict isolation, where the patient sees nobody but a nurse and eats only the simplest of food, is a good form of treatment. For the severest forms of hysteria, such as loss of appetite, serious paralysis, etc., the Weir Mitchell treatment has been most successful. (*See NEURASTHENIA.*) In this method also, isolation and absolute rest in bed are employed. Further, massage takes the place of exercise, and the patient is encouraged to eat large amounts of readily digestible food. Patients upon this system often fatten rapidly, and lose their nervous symptoms. In all cases of hysteria psychotherapy forms a very important element in treatment. This is carried out especially by suggestion, but in other cases it may take the form of persuasion, psycho-analysis, or education and employment.

ICE is used as a convenient form of applying cold both externally and internally. For external application the most convenient form of application is by placing chopped ice in an india-rubber bag, known as an ice-bag. The bag is closed by a screw cap and is laid upon the head, abdomen, or other part to which it is desired to make the cold application, a layer of flannel or a garment being placed between the bag and the skin to prevent a direct freezing action on the surface. When an ice-bag is not available, ice may similarly be applied to a small area by taking a large piece of gutta-percha tissue, laying the ice upon its centre, and bunching up the corners which are tied together with a string.

For internal application ice is used in cases of bleeding or inflammation in the mouth, throat, stomach, etc. For this purpose a succession of small pieces of ice is held in the patient's mouth, a fresh piece being administered as each bit melts. The small pieces of ice about the size of hazelnuts are conveniently kept from melting by being laid upon a piece of muslin suspended from the brim of a teacup, into which the water from the melting ice drips, thus preventing the ice from melting further.

ICHTHYOL, a dark, brown, thick liquid of peculiar smell, is used in several skin diseases, and also to diminish inflammatory conditions round the womb.

ICHTHYOSIS is a skin disease in which the surface is very rough and presents a dry, cracked appearance, very much resembling fish-scales.

ICTERUS is another name for jaundice. (See **JAUNDICE**.)

IDIOCY, or **IDIOCY**, is the term applied to a profound degree of mental defect in which the person is unable to guard himself against ordinary dangers and is of dirty habits. (See **MENTAL DEFECTIVENESS**.)

ILEOCÆCAL is the term applied to

the region of junction between the small and large intestines in the right lower corner of the abdomen.

ILEUM is the lower part of the small intestine.

ILEUS is another name for severe colic due to obstruction of the bowels. (See **INTESTINE, DISEASES OF**.)

ILIUM is another name for the haunch-bone, the uppermost of the three bones forming each side of the pelvis.

IMBECILITY is a term applied to feeble-mindedness in which the mental powers are somewhat greater than those possessed by an idiot. (See **MENTAL DEFECTIVENESS**.)

IMMUNITY is a principle by virtue of which the bodies of certain animals or human beings are protected from the invasion of certain diseases, or the action of certain poisons. It is a well-recognised fact that some persons expose themselves again and again to the risk of infection and are not affected, while others seem prone to contract any disease with which they are brought into contact. The immunity so enjoyed is of several types. Natural immunity is one which is inborn; but immunity may also be acquired in the course of life, or it may be produced artificially by inoculation, injection of the blood serum of immune animals, etc.

IMPERIAL DRINK (for composition see under **CREAM OF TARTAR**).

IMPETIGO is a skin disease of an infectious nature often found in schools, and peculiarly liable to be communicated from one boy to another at football. It consists of vesicles which appear here and there, on the face particularly, and dry up, leaving yellowish-brown scabs from which the discharge is infectious. These scabs fall off, leaving no scars, but the disease spreads from place to place over the skin, and may last for months if untreated. The eruption quickly disappears, as a rule, when

INCISION

treated with dilute ointment of ammoniated mercury (white precipitate ointment) in the strength of 1 part of the ammoniated mercury ointment to 7 parts of vaseline. Various other antiseptic applications of a mild nature are also used.

INCISION means a cut or wound and is a term specially applied to surgical openings.

INCISOR is the name applied to the four front teeth of each jaw (*see* **TEETH**).

INCOMPETENCE is a term applied to the valves of the heart when, as a result of disease in the valves or alterations in size of the chambers of the heart, the valves become unable to close the openings which they should protect. (*See* **HEART DISEASES**.)

INCONTINENCE is a term applied to the inability to retain the evacuations of the bowels and bladder. It occurs in diseases of these organs, injuries and diseases of the spinal cord, etc.

INCO-ORDINATION is a term applied to irregularity of movements produced either by loss of the sensations by which they are governed or by defects in the muscles or their nerves.

INCUBATION means the period that elapses between the time at which a person becomes infected by some disease and the first appearance of its symptoms. (*See* **INFECTION**.)

INDIAN HEMP (*see* **CANNABIS INDICA**).

INDIGESTION (*see* **DYSPEPSIA**).

INFANT-FEEDING.—When a newborn baby and its mother are healthy, the child should be entirely breast-fed for the first six or eight months of life. During the first three days the secretion of milk in the mother's breasts is not yet established, only a thin, clear fluid known as 'colostrum' being exuded, but the child should notwithstanding this be put to the breasts, both to stimulate the milk production, and because this fluid has an aperient action upon the child's bowels. No other food is necessary for the first

INFANT-FEEDING

three days. When the milk-flow is well established, the baby should be fed, at regular intervals of two or three hours, with a longer interval at night, for about ten minutes at a time, nor should crying on the part of the child cause any deviation from this rule. By this regularity, both the child's digestive organs and the mother's breasts are rested.

If for any reason the mother cannot nurse, recourse may be had either to a wet-nurse or to artificial feeding. If a wet-nurse be chosen she must be healthy, and her child should, if possible, be of about the same age as the foster-child.

In any case, milk in some shape should be the only food till the age of seven months. The simplest and best substitute for mother's milk is cow's milk slightly modified.

Humanised cow's milk may be prepared by diluting ordinary cow's milk with an equal amount of water and adding a small quantity of cream and of milk sugar. For babies brought up by hand, the cow's milk should be obtained quite fresh, and should be carefully diluted. If it is not 'certified milk', it should be boiled or pasteurised. Then it should be diluted, and in most cases it is sufficient to add an equal quantity of water, or of barley-water. If one wishes to be more exact one may add to every eight ounces of this mixture two ordinary teaspoonfuls of milk sugar, pressed level with the edge of the spoon, one tablespoonful of cream and one tablespoonful of lime-water.

When the baby is a month old, the amount of water added may be decreased gradually, till, by the age of six or seven months, the plain cow's milk is given and easily digested. After the age of seven months, the child's stomach will digest starchy food, and bread may be added to the milk or various soups and broths given. The child should be weaned about the end of the tenth month, and completely off the breast not

later than the twelfth. The food during the second year of life, however, should still consist mainly of milk, of which the child should consume from two to two and a half pints daily. Some part of this will be used in the making up of milk puddings and starchy foods, and still more will be given along with these foods. Porridge, bread, eggs, and soups may also be given, but these must be considered merely as additional to the regular quantity of milk on which the main results of the feeding really depend. Solid animal food should be withheld until the second year has been completed.

The bottle in which milk is given is a matter requiring great attention. In the first place, it must always be kept clean, and should be sterilised daily by boiling water or steeped in boracic acid lotion, two bottles being used and steeped upon alternate days. In the second place, there should be no tube attached to the bottle; a large india-rubber teat being fixed directly upon the neck.

The following table gives a general statement of the convenient intervals of feeding by day and night at different stages during the first year, as well as the approximate quantities for the various ages.

Sterilisation of the milk is very important, especially during the prevalence of summer diarrhœa and infectious diseases. In most cases simple boiling is sufficient, but it is still better to obtain 'certified milk', which does not need to be sterilised.

Signs of difficult digestion.—The *weight* of the baby is the best means by which to judge of the success or otherwise of the method of feeding in use. If the baby is not gaining weight but has no signs of indigestion, the food should be increased in amount. When the child, however, is not gaining or is actually losing weight, signs of difficult digestion can best be found by observing the behaviour of the stomach and bowels. (1) *Vomiting* is a fairly constant symptom of indigestion in children, the food being brought up soon after being swallowed, either in mouthfuls or in larger quantities. The milk in the vomit is often seen as large, hard masses of curd. (2) *Diarrhœa* is also a common sign of indigestion in children. The stools are usually frequent and offensive, and may be green in colour. They almost always contain little white masses of undigested curd and sometimes large quantities of mucus. (3) In some cases of indigestion, *constipation* is very marked, and, when move-

Age.	Interval between Meals by Day.	Number of Night Feedings (10 P.M. to 7 A.M.).	Number of Feedings in Twenty-four Hours.	Quantity for one Feeding.	Quantity for Twenty-four Hours.
	Hours.			Ounces. ¹	Ounces.
1st week . . .	2	2	10	1-1½	10-15
2nd to 4th weeks .	2½	1	8	1½-3½	12-28
5th week to 2nd month	3	1	7	3-5	21-35
2nd to 5th month .	3	1	7	4-6	28-42
5th to 9th month .	3	0	6	5-7½	30-45
9th to 12th month .	4	0	5	7-9	35-45

¹ An ounce is approximately two small tablespoonfuls.

INFANT-FEEDING

ment occurs, hard brown masses with mucus and blood are passed. (4) *Pain* is usually present, causing fretfulness and loss of sleep, but it should be remembered that the act of vomiting is, in the infant, much easier than in the adult. Colic is also produced in some cases by the constipation.

Treatment of difficult digestion.—

It is well, when these symptoms appear, to revise the method of feeding in use. Taste the food to ensure that it is sufficiently warm when given. See that the bottles are scrupulously clean, and their nipples fresh. The baby should be prevented from taking the food too rapidly, the quantity given at each feed should be carefully regulated, and the hours for feeding strictly adhered to. Should the symptoms continue, it may then be well to reduce the amount of the feed, giving, for example, half the usual quantity every hour and a half instead of every two hours. Another method often adopted is to give the usual quantity, but to lengthen the intervals between the feeds. Or by diluting one part of milk with two parts of water and omitting the cream from the food, one may sometimes be successful in allaying the symptoms. When diarrhoea is troublesome, lime-water has the effect of softening the curd of cow's milk, and has, in addition, an astringent action on the diarrhoea. It should be used in such cases in the proportions given above for ordinary water. Should these simpler measures fail, medical advice should be sought, because serious results may follow very quickly upon improper feeding of an infant.

When well-marked indigestion is present, means must be taken to subdue the irritation in the stomach and bowels, as well as to find a food suitable to the weak powers of the stomach. In such cases, it is often well to begin treatment with a dose of some simple purgative, such as castor oil. This clears out any irritating contents from the bowel, and may be

INFANT-FEEDING

sufficient to check diarrhoea if present. In very severe cases, with the object of keeping the bowel clean and, at the same time, supplying needed fluid to the body, it is often requisite to wash out the bowel once or twice daily with warm saline fluid. In order to give a food which will leave no residue to irritate the bowels, raw meat juice in water or the whey of milk, instead of diluted milk, is often employed, in quantities suitable to the age of the baby (see table above). As the stomach becomes less irritable, this may be partially, and ultimately entirely, replaced by some of the more easily digestible modifications of cow's milk. Thus condensed milk, the curd of which is softer than that of fresh cow's milk, is much used by some authorities. Others prefer to digest the food partially before giving it to the child, and this they do by means of peptogenic milk powder. (*See PEPTONISED FOODS.*)

In other cases, one or other of the well-known foods is occasionally tolerated when difficulty is experienced with milk, and various proprietary foods may be cautiously tried till a suitable one is found in cases where milk is badly digested.

General rules for feeding infants and young children.—The proper routine of feeding, sleeping, and exercise forms the beginning of a child's education, and the following general rules should be observed :

1. Give food at regular hours only.
2. Take ample time ; do not hurry the child in sucking or chewing.
3. If a child is disinclined to eat he should not be coaxed or forced to do so. Children are often overfed ; if a child is losing weight he should be examined, beginning with the mouth, for signs of disease, otherwise the regulation of the amount of food should be left to his appetite.
4. Fancy dishes should not be given to tempt the appetite if simple food is refused ; nor should food refused at meals be allowed at other times.

INFANTILE MORTALITY

5. Although all food given to a child should be simple, it ought to be varied from day to day.

6. Highly seasoned food, much dressed food, and food with a large indigestible residue should not be given to children. The following are **not admissible** for young children :

Meats.—Sausage, pork, salt fish, tinned beef, fried meats, goose, duck, game, stewed meats.

Vegetables.—Raw vegetables like tomatoes or cucumber ; fried potatoes.

Fruits.—All fruits out of season ; dried fruits ; tarts ; any stale fruit, particularly in summer. [Note that fresh fruit juice, *e.g.* of grape or orange, is very beneficial for young children, particularly those that are artificially fed ; apples are very good for the teeth of children after the second year.]

Bread and Cake.—New bread of all sorts ; hot buttered toast ; rich cakes with much fat or heavily iced.

Drinks.—Strong tea or coffee ; alcoholic liquors of any kind.

7. If a child habitually refuses some important article of diet, like milk, egg, or cereals, this should be given first and the more palatable food withheld till the simpler one is taken. The refusal of some special food tends readily to become a habit with some children.

8. If a child is feverish, food should be greatly reduced in strength and quantity. In very hot weather also, food should be much diminished and more water given.

INFANTILE MORTALITY means the annual number of deaths of infants under one year of age to every thousand births during the same year.

The chief causes of infantile mortality are premature birth and various constitutional defects, inexperience and neglect on the part of mothers, adverse industrial conditions, improper feeding of the infants, and overlying. The diseases which especially operate to raise it are epi-

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demics of measles with respiratory troubles in the wet months of the year, and the prevalence of diarrhœa in hot summers.

INFANTILE PARALYSIS is a form of loss of muscular power in one or more limbs, or even in a group of muscles, following a feverish attack in children and young adults. (*See PARALYSIS.*)

INFECTION is the name given to the process by which a disease is communicated from one person to another. All diseases so communicable are called infectious. There is, in the case of all such diseases, some substance produced in the body of the diseased person, which, on being transmitted to a second person, is capable of reproducing itself in larger quantity and causing a particular disease.

Prevention of infection.—The various channels of infection are mentioned under the heading of the different infectious diseases. As children are much more liable to contract infectious diseases than grown-up people, attempts to prevent the spread of these diseases are specially directed towards separating affected from healthy children. The measures taken apply particularly to schools, but the rules applicable to children may well be practised with regard to persons of any age and in respect of any public institution.

1. The following diseases may, for this purpose, be considered infectious : *chicken - pox, diphtheria, German measles, measles, mumps, ophthalmia, ringworm, scarlatina, smallpox, typhoid fever, typhus fever, and whooping-cough.*

2. Persons who have contracted any of these diseases should not again mix with the public till the following periods have elapsed.

Chicken-pox, when all the scabs have fallen off, particular attention being paid to the scalp.

Diphtheria, four weeks from the beginning, provided there is no sore throat, nor any discharge from throat,

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nose, eyes, or ears, and that the diphtheria bacillus cannot be found in the throat.

German measles, not less than ten days after the rash appeared.

Measles, not less than two weeks after the rash appeared, but then only if the cough has ceased.

Mumps, not less than three weeks after the beginning, and then only if all swelling has been gone for a week.

Ophthalmia, not until the redness of the eyes has disappeared, in one or two weeks, should the same washing utensils be used by the patient and by other people. In the case of trachoma, the child should be permanently removed from school.

Ringworm of the head, not until all bare patches and broken hairs showing the fungus have disappeared, as tested by careful examination. After ringworm of the body, infectiveness disappears when the skin has become smooth again.

Scarlatina, not less than six weeks after the rash appeared, and then only if peeling and all discharges from nose, ears, or suppurating glands are stopped, and the surface of the body has been disinfected.

Smallpox, not until all the scabs have fallen off.

Typhoid fever, not less than six weeks from the beginning of the fever, and then only if there have been no relapses.

Whooping-cough, not less than five weeks from the beginning of the whooping, and then only provided that the cough has ceased.

3. After persons have been 'in contact' with the following serious diseases, viz. *diphtheria*, *scarlatina*, *typhoid fever*, *typhus fever*, and *smallpox*, they should remain in quarantine for periods exceeding the longest possible incubation period, viz. *diphtheria*, twelve days; *scarlatina*, ten days; *typhoid fever*, twenty-three days; *typhus fever*, fourteen days; *smallpox*, sixteen days. It is essential,

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however, that the clothes of the suspected person should be disinfected at the *beginning* of the quarantine period.

After contact with the slighter diseases, viz. *measles*, *German measles*, *chicken-pox*, *whooping-cough*, and *mumps*, children attending large schools where infection would spread easily, should be isolated, after careful disinfection of their clothes, for the periods given in the Table. But, in the case of adults and of children living at home, it suffices if they at once take up residence in an uninfected house, and, though mixing freely with other persons, report daily to a medical man for a few days before and after the end of the incubation period of the disease to which they have been exposed. In the case of measles, adults and children who have had measles previously should, after exposure to risk of infection, if they are mixing with the public, be carefully examined for signs of the disease for three days before and three days after the end of the usual incubation period. It is a good plan for children to stay away from school during these six days. Instead of the 'contacts' changing their abode, the patient is usually removed, and the sickroom together with all clothing that has been in contact with him is disinfected. By these means, if 'contacts' become infected, the fact will be recognised within a day, and they can at once be isolated and treated.

4. Clothes, books, etc., which have been used by an infected person, must, when his illness is at an end, be destroyed or carefully disinfected before use by any one else. (See DISINFECTION.)

5. The methods applicable to certain diseases which are communicated in special ways, e.g. consumption, are given under the heading of the disease in question. For the methods to be adopted against flies, lice, etc., see INSECTS IN RELATION TO DISEASE.

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TABLE SHOWING DURATION OF INFECTIOUS DISEASES

	Incubation period after infection and before illness begins.	Day after illness begins on which the eruption		Length of time, after illness begins, at which infection ceases.	Isolation period required after the <i>latest</i> exposure to infection.
		appears.	fades.		
CHICKEN-POX .	12 to 20 days	1st day and 3 following days.	About 4th	When every scab has fallen off.	20 days
DIPHTHERIA .	2 to 10 days	Membrane appears in throat on 1st or 2nd day.	..	In 4 weeks, if no discharges and no albumin in the urine, and if bacteriological examination of nose and throat be negative.	12 days, but depends on bacteriological tests
ERYSIPELAS .	3 to 10 days	1st day	..	When rash has gone and desquamation ceased.	12 days
GERMAN MEASLES (Rötheln) .	7 to 18 days or even longer	2nd to 4th	4th to 7th	In not less than 10 days from appearance of the rash.	21 days
INFLUENZA .	1 to 4 days, usually 3 to 4 days	..	..	In 3 days after the temperature has become normal, and all catarrhal discharges have ceased.	5 days
MEASLES .	10 to 14 days	4th day. The patient is highly infectious for 2 days before the rash appears.	5th to 7th	In not less than 2 weeks from appearance of the rash.	16 days, or medical inspection from 9th to 14th day
MUMPS .	10 to 22 days	..	..	In not less than 3 weeks, and then only when 1 week has elapsed since subsidence of all swelling.	24 days
RINGWORM .	..	..	..	When examination reveals no broken-off hairs; and microscopic examination discovers no parasite in the hairs.	..
SCARLET FEVER .	1 to 8 days, usually 2 to 3 days	2nd	5th	When desquamation and sore throat and albuminuria disappear, but never in less than 6 weeks.	10 days
SMALLPOX .	12 to 14 days	3rd or 4th	9th or 10th	When every scab has disappeared.	16 days
TYPHOID (ENTERIC) FEVER	7 to 21 days, usually 10 to 14 days	8th or 9th	21st	Indefinite (typhoid carriers occur).	21 days
WHOOPING-COUGH	7 to 14 days	The characteristic whooping may not appear for 2 to 3 weeks, although the patient is infectious before then.	..	In 5 weeks from commencement, provided all characteristic spasmodic cough and whooping have ceased for at least 2 weeks.	21 days

INFESTATION is a term applied to the occurrence of animal parasites in the hair or clothing. (See INSECTS IN RELATION TO DISEASE.)

INFLAMMATION may be defined

as the reaction of the tissues to any injury, short of one sufficiently severe to cause their immediate death. The term is limited sometimes to the changes which take place when bac-

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teria enter the body, but the changes in the latter case, though specially severe, are essentially the same as those produced by any other source of irritation. There are four chief symptoms of inflammation, viz. redness, heat, pain, and swelling, all of which, and particularly the last, are present in greater or less degree.

Treatment.—In the earlier stages of an inflammation, cold, either in the form of ice or of evaporating lotions applied to the part, appears to be the best remedy. Later on, cold has little effect, and moderate warmth with moisture, as gained by poultices or fomentations, has a softening action, soothes pain, and, if an abscess be inevitable, allows this to form more quickly. Sedative substances, such as opium, are also employed to soothe pain. When the inflammation is a superficial one and direct applications are possible, various antiseptic washes, emollients, and astringent powders are applied. Where the inflammation is deep-seated various means are taken to control excessive congestion in the blood-vessels of the affected organ, the chief being counter-irritation and cupping.

For inflammation of special organs see APPENDICITIS, PNEUMONIA, PLEURISY, PERITONITIS, etc.

INFLUENZA, also known as GRIPPE and EPIDEMIC CATARRH, is an infectious disorder of short duration, characterised specially by catarrh of the respiratory passages and alimentary canal, and occurring mostly as an epidemic.

Symptoms.—Owing to the fact that almost any organ of the body may be affected in influenza, and that the disturbance produced is rather interference with the functions of affected organs than any destructive change, the symptoms are fairly vague. The most common disturbances consist of a sudden feverish attack, accompanied by a chilly feeling, shivering, headache, and aching pains through the body, followed by the development

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of sore throat and cough. The onset is so sudden in many cases that the patient can describe what he was doing at the moment he was first affected. Constipation, mental depression, and a feeling of great exhaustion commonly accompany the symptoms named, and last for 3 to 5 days, or the attack may be prolonged to several weeks. There is, however, after the feverishness and other symptoms have quite passed off, a very slow return to ordinary appetite and strength. A state of feebleness and easily induced fatigue, lasting for weeks or months after the attack has passed off, is also highly characteristic of influenza. Beyond these general symptoms there are three more or less distinct types of the malady, which shade off imperceptibly into one another, but of which one or other has been most pronounced in different epidemics. These are the types in which the respiratory, nervous, and digestive systems respectively are chiefly affected.

In the *respiratory form*, in addition to the symptoms mentioned above, the cough and bronchitis especially develop, and this type forms the most common of all. In many cases, particularly old people, just as they are apparently recovering from the influenza, pneumonia develops, and the illness takes a very serious turn. Pneumonia under these circumstances is far more likely to be fatal than an ordinary attack of pneumonia, and the chief mortality of influenza is due to this complication.

When the *nervous form* predominates, headache and backache are often extreme. Sleeplessness, neuralgia, and irregularity or great slowness of the heart's action are common symptoms. Various mental disturbances, such as great depression, which may be prolonged into melancholy after the attack clears off; delirium, which sometimes passes into mania, or such enfeeblement of the powers

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of mind and body that a long-continued or even permanent state of neurasthenia remains, are by no means infrequent results of influenza. Paralysis of limbs or of single muscles, with gradual wasting of the affected part, is also an occasional symptom.

When the *digestive system* is chiefly affected, in addition to the general symptoms of influenza, there ensue vomiting, colic, and diarrhoea, with the passage of a great deal of mucus, followed by a weakness of the digestive powers which may last for many months.

The death-rate from influenza is specially great among old people.

Treatment. — Often the enfeeblement and feverishness are so great that the person must perforce take to bed, but it is not at all uncommon for vigorous people to struggle on with their usual work. This is very unwise, because not only is the risk of pneumonia and other serious complications made much greater by this course, but the resulting enfeeblement is greater and lasts longer than if the patient had husbanded his strength. It is a good rule, therefore, to keep in bed as long as the temperature remains elevated, and, in the case of elderly people, for several days after it has become normal. At the beginning of the illness a rest in bed, combined with some of the measures mentioned under CHILLS AND COLDS, may be effectual in limiting the attack of influenza to mild illness. As to diet, the food should be of the lightest, particularly in the digestive type of the disease, being limited to milk, rice, or corn-flour, and thin broths. In severe or complicated cases, careful nursing, feeding, and stimulation of the heart's action are specially required. Salicylate of soda, with an equal amount of bicarbonate of soda, or phenacetin forms the favourite remedy for the pains and headache of slighter cases. Quinine is also frequently used, especially in the form of ammoniated tincture of quinine,

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in doses of a teaspoonful. In cases where there is evidence that a considerable amount of bronchitis is present with threatening bronchial pneumonia, an inhalation containing menthol and tincture of benzoin or one containing eucalypti (see INHALATION) often serves to reduce considerably the inflammation in the bronchial tubes. When constipation is present it may be relieved by calomel or castor oil. In every case, after the attack has passed off, a course of tonic treatment is necessary for the speedy restoration of health and strength.

Persons who are liable to contract influenza or severe catarrhs, sometimes undergo protective inoculation with a vaccine in the autumn. In some cases this appears to confer a measure of protection for a few months, in other cases it is quite ineffective.

INFUSIONS are preparations of vegetable drugs made by steeping them for some time in water and straining. Among the better-known infusions are those of calumba, chirietta, cinchona, digitalis, gentian, orange, quassia, senega, and senna. The dose of most infusions is from one to several tablespoonfuls.

INGUINAL REGION is the region of the groin.

INHALATION means a method of applying drugs in a finely divided or gaseous state, so that, on being taken in on the breath, they may come in contact with the nose, throat, air passages, and lungs. There are five chief means by which drugs are mingled with the air and so taken in by breathing. These are as follows :

(a) Volatile drugs, which become gaseous at the ordinary temperature, are sprinkled on cloth, wool, or otherwise exposed to the air.

(b) Respirators are worn in front of the mouth and nose when it is desired to admit small quantities of some slowly volatile drug constantly into the air passages.

(c) Drugs which give off volatile

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substances on burning are mixed with some combustible substance, and the fumes they give off inhaled.

(d) Steam inhalations are the most useful forms of all. Steam itself, or hot moist air, has a very soothing effect upon the mucous membrane of the air passages, and the steam may be impregnated with many moderately volatile drugs. This type of inhalation is used especially in bronchitis and inflammatory conditions of the throat and larynx. If it be desired to surround the patient constantly with a steamy atmosphere, the most convenient mode of doing so is by a kettle placed upon the fire or over a spirit lamp, from which a long white-iron funnel leads in beneath a tent formed by a blanket over the upper half of the patient's bed. In cases of chronic bronchitis, one teaspoonful of the following mixture may be now and then added to the hot water: pine-wood oil 1 ounce, eucalyptus oil 1 ounce, creosote $\frac{1}{2}$ ounce. Or in acute cases, where a soothing effect is specially necessary, a teaspoonful of the following: compound tincture of ben-zoin 1 ounce, menthol 10 grains, spirit of chloroform $\frac{1}{2}$ ounce. Either of these formulæ may be used in the simple way of adding it to a jug half full of boiling water, over which the mouth is held, the head being enveloped in a towel that falls down round the sides of the jug. The same remedies may be added in similar quantity to an inhaler and the mouth directly applied to the tube leading from it.

(e) The most recent form of inhalation consists of a fine spray or cloud driven off from a fluid by a stream of compressed air. By this means, various medicaments can be made to reach the farthest recesses of the lungs. The smaller of these 'nebulisers' or 'atomisers' are worked by a hand-ball of indiarubber, which drives a strong stream of air across the mouth of another tube dipping into the liquid. For disinfectant purposes, one grain of pure

INJURED, REMOVAL OF

carbolic acid or of iodine may be used dissolved in an ounce of water, but generally the fluid employed is of an oily nature, such as in the following formula, which may be used for colds and coughs: menthol 20 grains, camphor 10 grains, albolene 1 ounce.

INJECTIONS (*see ENEMA and HYPODERMIC INJECTIONS*).

INJURED, REMOVAL OF.—In the case of some injuries, such as that of the brain in apoplexy, or the perforation of the bowels caused by a bullet-wound of the abdomen, the less movement of the patient that takes place at first the better for his chances of recovery, and it is sometimes advisable that treatment should be carried out for some time near the spot where the injury has been sustained. When a bone has been broken it is essential that the fragments should be temporarily supported and made rigid by suitable devices before any attempt is made to change the patient's position. (*See FRACTURES*.) In other cases, as, for example, those of faintness, shock, immersion in water, etc., some other form of first-aid treatment or the administration of stimulants is urgently necessary prior to removal. (*See FAINTING; COLLAPSE; DROWNING, RECOVERY FROM; HÆMORRHAGE, etc.*) During removal an attendant must be constantly with the injured person.

Severely injured persons, or those with any tendency to faintness, bleeding, shock, or other general symptoms, should be carried lying at full length with the head slightly supported on a low pillow; a similar position should be adopted in the case of persons who have sustained any injury to the bones or joints of the lower limb, or of the shoulder-joint, or severe wounds of the head, chest, or abdomen. On the other hand, injuries of the hand or forearm when properly supported, no matter how severe they may be, slight injuries of the foot, and uncomplicated

INJURED, REMOVAL OF

wounds to the head, face, or upper part of the body, permit generally of the patient either walking or being removed in the sitting posture.

In wounds of the head care should be taken that the injured part does not press upon the stretcher.

In severe injuries to the back the greatest care must be exercised in lifting the patient, and some rigid though well-covered form of stretcher is to be preferred.

In fractures of the leg or thigh the patient should lie upon his back inclined slightly towards the injured side and supported thus by a pillow, folded coat, etc.; in this position there is least jarring of the injured part.

In fractures of the upper limb, if the patient has to lie down, which is not usual, he should incline slightly towards the sound side, so that there is no risk of the body pressing upon the injured part.

In wounds or diseases of the chest there is often difficulty in breathing, which is relieved by propping the patient half up and turning him towards the affected side.

In painful conditions of the abdomen, or in the case of transverse or punctured wounds of this region, the patient should lie upon his back with the knees drawn well up and supported. In the case of a vertical wound of the abdomen the legs are kept straight.

The patient is usually carried feet first, but in going uphill or upstairs this position is reversed; in all cases, however, in which there is a fracture of the lower limb, the patient's head is kept lowest on a hill or stair.

No attempt should be made by inexperienced bearers to carry a stretcher over a wall or ditch, and on no account should a stretcher be carried upon the bearers' shoulders, because a fall may do very serious injury to the patient.

The stretcher should be carried at the full length of the bearers' arms, as

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horizontal as possible, and the bearers, though walking at an equal rate, must be careful not to keep in step, which causes the stretcher to swing painfully.

If the injured person is able to sit up, and two bearers are available, he can best be carried for a short distance by the *two-handed seat*. For this the bearers face one another, the one on the right interlocking the fingers of his right hand with those of the left hand of the other bearer; each places his disengaged hand behind the patient or on the other bearer's hip or shoulder. In lifting the patient, they kneel at his sides each upon the knee nearest to his feet, and, forming the seat beneath his thighs, they rise together supporting him, while he assists if possible by putting his arms round their necks.

INOCULATION is the process by which infective material is brought into the system through a small wound in the skin or in a mucous membrane. Many infectious diseases and blood-poisoning are contracted by accidental inoculation of microbes.

Inoculation may also be used as a preventive measure against disease; for example, an accurately measured dose of dead bacteria known as 'vaccine' may be inoculated to protect persons against attacks of influenza or typhoid fever (*see VACCINE*).

INSANITY may be defined from a physical standpoint as a disease or disordered working of that part of the nervous system which determines mind and conduct. So long as individual peculiarities occasioned by mental disorder do not result in conduct or behaviour which is markedly opposed to prevailing social custom, society does not interfere with the person. When the person's conduct becomes so far divergent from social usages that he becomes legally certifiable, he can be sent compulsorily to an asylum. It must be remembered,

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however, that there are all grades of mental disorder from slight peculiarities or temporary delirium, upwards.

Causes.—The causes of mental disorder fall into two great groups. Certain persons go through life with a tendency to become disordered mentally, when at any time certain causes arise, while other persons are subjected constantly to much greater strains of the same nature without developing any mental abnormality. It is necessary, therefore, to recognise (1) the nervous constitution or set of predisposing causes, and (2) the stresses which are particularly liable to unbalance the mind, or exciting causes.

Among the exciting causes of insanity, infectious diseases, intoxicants, such as alcohol, disorders of the endocrine glands and of the reproductive organs play an important part. The period of adolescence, the occasion of child-birth, the climacteric epoch and the onset of old age are the times of life at which insanity is most likely to appear. Privations, excesses in mode of life and great physical or mental strain are also important causes.

Symptoms.—Among the symptoms of mental disorder alterations in disposition and habits are often the first things that draw attention to the onset of mental trouble. Insane beliefs, such as delusions of the senses, of suspicion or persecution are more advanced symptoms, and insane acts may ultimately make their appearance, such as suicide following upon melancholia, homicide as an outcome of delusions of suspicion, and meaningless acts such as fantastic dressing, tearing of the clothes, refusal of food, etc.

Varieties.—The chief varieties of insanity include the following.

Psycho-neuroses are especially characterised by anxiety or apprehension, such as fear to open letters or dread of the onset of some fatal disease.

Acute confusion is shown by a clouded mental state and attitude of

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indifference to surroundings, amounting sometimes to stupor, delusions, and great forgetfulness. This is one of the types of insanity that is most evident to everybody, but one of the best as regards prospect of recovery.

Mania is a state of mental overactivity, in which the patient is talkative, sleepless, sometimes incoherent, and in severe cases completely deprived of will power.

Melancholia is a disorder accompanied by a feeling of misery, not justified by the person's circumstances, and accompanied by physical weakness and loss of energy.

Paranoia is a state in which there are delusions forming a system so that the person projects his own ideas as the supposed motives and conduct of other people, often imagining himself to be the victim of persecution which has no foundation in fact.

Dementia is a condition in which all the mental powers become weakened; it may make its appearance early in life as *dementia precox*, or it frequently occurs along with the weakening physical powers of old age, or it may be the final condition produced by some other type of insanity.

States of mental impairment in a person whose mind has never developed at all are known as mental defectiveness, in contrast to insanity that has appeared in a person formerly of good mental power.

Treatment.—The prevention of insanity includes many social measures to remove mentally defective persons into colonies for the feeble-minded, to provide treatment at as early a stage as possible for nervous disorders which are apt to terminate in insanity, and to improve social conditions and avoid uncertainty in regard to wage earning and maintenance. In individuals who are predisposed to mental disorder, a healthy mode of life with regular food, an education on broad and liberal lines and discipline in habits of self-control and self-denial are of great importance.

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The choice of a calling which does not involve great mental strain is also highly desirable.

When symptoms of mental disorder begin to manifest themselves, early application for advice at one of the clinics which are now provided in connection with most large hospitals will frequently serve to check the disorder in its incipient state. Removal from home surroundings is of great importance in many cases, and the practice is growing for insane persons at a stage, while their disease is still curable, to submit themselves voluntarily to treatment in a mental hospital, where treatment is carried out on lines similar to those employed in hospitals for physical diseases. A patient who voluntarily submits to asylum treatment may leave the institution at any time on giving three days' notice of his intention to do so.

In cases where the detention of an insane person in an asylum becomes necessary for the safety of himself or other people, this is effected on a petition presented by a near relative and supported by two certificates signed by medical practitioners and endorsed by a magistrate.

INSECTS IN RELATION TO DISEASE.—Many insects play an important part in the transmission of infectious diseases. Thus flies by their feet and their feeding habits carry the organisms which cause typhoid fever, summer diarrhoea, and other diseases, the tsetse fly spreads sleeping sickness, mosquitoes transmit the germs of malaria and yellow fever, fleas convey plague germs, lice are held responsible for typhus fever and for 'trench fever', while the bed-bug is blamed for transmission of several Eastern diseases. In addition, these creatures are nuisances as well as dangers.

HOUSE-FLY.—This fly lays its eggs in manure, or in moist fermenting vegetable matter. The maggot is hatched within a day, feeds on the manure, etc., passes through the

INSECTS IN RELATION TO DISEASE

pupa stage in little more than a week, and becoming a fly is capable of egg-laying about fourteen to twenty days from its own appearance as an egg. As 120 to 150 eggs are laid by each female fly, this fly is capable, under the most favourable conditions, of producing between twenty-five and fifty million progeny within two months. The fly gorges on fluid food which it sucks up by means of its proboscis, and it has the habit of repeatedly vomiting and reswallowing the contents of its crop as it feeds. It walks in filth habitually, and being provided with hairy legs and body it is apt to carry off portions of this, in which are entangled numbers of bacteria. The fly has been well described as a 'winged sponge', and its immense power to distribute disease germs over the surface of uncovered food is evident.

BLOW-FLY or BLUE-BOTTLE lays its eggs (450 to 600 in number) on meat, fish, or decaying animal matter. The maggot hatches out within a day, passes through the pupa stage and becomes a full-grown fly in about three weeks. Its habits are similar to those of the house-fly, though in numbers it is much less plentiful.

Treatment of flies.—The most important measure is to destroy their breeding grounds near human dwellings. All kitchen refuse must be burned, and none should be left exposed so that flies may deposit their eggs in it. Stable litter and manure must be disposed of, or kept covered and shut up in outhouses, not allowed to accumulate in the open air and sunshine near houses. Adult flies may be destroyed to a great extent by covering all food in summer with muslin or wire gauze, and by exposing sticky fly-papers or fly-traps in kitchens or other places where flies are numerous. A good plan is to set out over night in a wide dish a 3 per cent solution of formalin to which a little sugar and milk have been added.

LICE.—The presence of the head-

louse and of the crab-louse is comparatively easily prevented. The body-louse is much more difficult to banish. The lice suck blood from their 'host' once or twice daily; and, if they do not get food, they die in three to five days. The female produces five eggs daily for about twenty-five days, laying them in folds and seams of the clothing next the skin. The young lice are hatched in one to five weeks and mature so rapidly that the time for a new generation from egg to egg is about twenty-four days.

Treatment of lice.—Wearing a small bag of camphor or of sulphur next the skin has a certain amount of effect in repelling lice. For the head- and crab-louse crude paraffin oil is an effective remedy. For the body-louse merely laying aside the clothes for a week kills all the adults but not the eggs; baking of the clothes in a disinfectant or laying them aside for two months destroys life in the latter also, but this is not always easy to carry out. A jelly ('vermijelli') of crude mineral oil 9 parts, soft soap 5 parts, and water 1 part may be rubbed along the seams of the clothing where the eggs are laid; and the clothing may be dusted once a week with N.C.I. powder consisting of naphthalene 96 parts, creosote 2 parts, iodoform 2 parts.

FLEAS and BED-BUGS are responsible for conveying some diseases. They are kept off by dusting the clothes with the N.C.I. powder mentioned above or with fresh pyrethrum powder, and they are killed by fumigation of clothes and rooms with sulphur. Bedsteads, floors, etc., in the crevices of which these creatures are concealed, may also be treated by scrubbing with 5 per cent cresol solution in water or with 1 per 1000 corrosive sublimate solution.

MOSQUITOES.—One of these is responsible for conveying the parasite of malaria, another for distributing the infection of yellow fever.

INSOMNIA (*see* SLEEP, HYPNOTICS).

INSULIN is the name applied to the internal secretion of the pancreas. It acts by enabling the muscles and other tissues which require sugar for their activity to take up this substance from the blood. When it is deficient, the sugar derived from the food accumulates in the blood and is wastefully excreted in the urine. Insulin prepared from the pancreas of sheep and oxen is administered by hypodermic injection in cases of diabetes, and thus enables the sugar in the circulation to be utilised so that its excretion in the urine ceases.

INTERCOSTAL is the term applied to the nerves, vessels, and muscles that lie between the ribs, as well as to diseases affecting these structures.

INTERCURRENT is a term applied to one disease which occurs during the course of another disease already present, and modifies its course or increases its severity.

INTERSTITIAL is a term applied to tissue of a supporting character and formed of fibrous tissue, as well as to diseases which specially affect this.

INTESTINAL STASIS (*see* STASIS and CONSTIPATION).

INTESTINE is the whole of the alimentary canal situated below the stomach. In it the chief part of digestion is carried on, and through its walls all the food material is absorbed into the blood and lymph streams. (*See* DIGESTION.) The length of the intestine in man is about 28 to 30 feet, and it takes the form of one continuous tube suspended in loops in the abdominal cavity.

The intestine is divided into 'small intestine' and 'large intestine'. The former comprises that part of the tube which extends from the stomach onwards for 22 feet or thereabout, and is at its broadest point about 1½ inches in width. The large intestine is the second part of the tube, and though shorter (about 6 feet in length) is much wider than the small

INTESTINE, DISEASES OF

INTESTINE, DISEASES OF

intestine, reaching in places a size of $2\frac{1}{2}$ inches.

INTESTINE, DISEASES OF.—The signs of trouble which has its origin in the intestines are vague, amounting generally to pain somewhere about the abdomen, sometimes vomiting, and irregularity in movement of the bowels in the direction either of stoppage or of excessive action. The conditions arising in the bowels are therefore specially difficult to recognise exactly.

Several diseases are treated under separate headings. See APPENDICITIS, CONSTIPATION, DIARRHŒA, DYSENTERY, ENTERIC FEVER, HERNIA, PERITONITIS, PILES; RECTUM, DISEASES OF; WORMS.

INFLAMMATION of the bowel may affect either its outer or its inner surface. The outer surface is covered by peritoneum, and peritonitis is a serious disease with very special symptoms. (See PERITONITIS.) Inflammation of the inner surface is known generally as 'enteritis', inflammations of special parts receiving the names of 'colitis', 'appendicitis', etc. Enteritis may form the chief symptom of certain infective diseases due to special organisms, for example in typhoid fever, cholera, dysentery.

Symptoms.—Diarrhœa is the most common and most marked symptom. Pain, particularly of a griping nature, which comes and goes, is also common. The temperature in acute cases is raised, and there is restlessness, even delirium. If the diarrhœa is very profuse, collapse speedily comes on.

Treatment.—Each case requires special handling, according to the cause and the severity. Where diarrhœa is very severe this requires special treatment. (See DIARRHŒA.) There are a few general principles which are applicable to all cases. The food should be lessened or even withheld completely for a day, so that the inflamed surface may not be irritated by the passage over it of half-digested food. Rest in bed is

essential. Large draughts of warm water have a beneficial action by flushing out the bowel and removing irritating substances. In general, water is given by the mouth, and in some cases it is introduced by an enema to irrigate the lower bowel. Various astringent drugs are administered. In acute cases of inflammation applications are made to the surface of the abdomen in order to exert a soothing effect. The most common are hot fomentations, to which laudanum, turpentine, or other substances have been added.

ULCERATION of the bowels arises in a manner similar to the production of ulcers on the skin surface, though probably these internal ulcers heal much more rapidly than others.

Treatment in cases of ulceration is similar to that for inflammation.

PERFORATION of the bowel may take place as the result either of injury or of disease. Stabs and other wounds which penetrate the abdomen may damage the bowel, and severe blows or crushes may tear it without any external wound. Ulceration, as in enteric fever, or, more rarely, in consumption, may cause an opening in the bowel-wall also. Again, when the bowel is greatly distended above an obstruction, fæcal material may accumulate and produce ulcers, which rupture with the ordinary movements of the bowels. Whatever be the cause, the symptoms are much the same.

Symptoms.—The contents of the bowel pass out through the perforation into the peritoneal cavity, and, making their way between the coils of intestine, set up a general peritonitis. In consequence, the abdomen is painful, and after a few hours becomes swollen and tender to the touch. Vomiting is a symptom, and the person passes into a state of collapse. Such a condition is almost invariably fatal in two, or at most three days, if not promptly treated.

Treatment.—All food should be

withheld, because whatever is taken into the stomach is either vomited or is liable to pass out of the perforation into the peritoneal cavity. Ice may, however, be given to suck in order to allay thirst and vomiting. An operation is urgently necessary, the abdomen being opened, the perforated portion of bowel found, and the perforation stitched up.

OBSTRUCTION of the bowels means a stoppage to the passage down the intestine of the partially digested food. Obstruction may be due to a hernia that has become strangulated (*see* HERNIA); sometimes in a child to intussusception; frequently to adhesions following a previous inflammation or operation; and, in the chronic form, most commonly to a tumor growing in the wall of the bowel. Obstruction may be acute when it comes on suddenly with intense symptoms, or it may be chronic, when the obstructing cause gradually increases and the bowel becomes slowly more narrow till it closes altogether, or when slight obstruction comes and goes till it ends in an acute attack. In chronic cases the symptoms are much the same as those of the acute variety, though they are milder in degree and more prolonged.

Symptoms.—There are four chief symptoms of this condition, and any case where these are combined demands immediate treatment. These are pain, vomiting, constipation, and swelling of the abdomen. The *pain* is of a gripping character, and may be very severe. The *vomiting* is peculiar in character. It begins with the first onset of pain, and consists of the contents of the stomach. Later it is yellow or green, bitter, and contains much bile, while, after several hours have elapsed, it becomes brown and ill-smelling, and is then known as 'fæcal vomiting'. The *constipation* in acute cases comes on suddenly, while in chronic cases it may be preceded by a state in which constipa-

tion and diarrhœa alternate, or by one in which the stools gradually get smaller and smaller in size, possibly over a period lasting for several months. The *swelling of the abdomen* may cause great and painful distention, or, in chronic cases, loops of the intestine become visible on the surface in their attempts to force their contents past the obstruction.

Treatment.—As a rule the surgeon opens the abdomen, finds the obstruction and relieves it, or if possible removes it altogether. In chronic cases much relief is gained from a daily dose of salts, which keeps the contents of the bowel in a fluid state.

INTOXICATION is a term applied to states of poisoning. The poison may be some chemical substance introduced from outside, *e.g.* alcohol (*see* ALCOHOLISM), or it may be due to the products of bacterial action, the bacteria either being introduced from outside or developing within the body. The term 'auto-intoxication' is applied in the latter case.

INTRACRANIAL is the term applied to structures, diseases, etc., contained in or rising within the head.

INTUSSUSCEPTION is a form of obstruction of the bowels in which part of the intestine enters within that part immediately beneath it. This can best be understood by observing what takes place in the fingers of a tightly fitting glove as they turn outside in when the glove is pulled off the hand. The persons affected are almost always young children, and the condition follows severe purging, injury of the abdomen, or especially the eating of indigestible substances. The symptoms are those of intestinal obstruction in general, and in addition there is often a discharge of blood-stained mucus from the bowel. The treatment consists—unless the symptoms rapidly subside, when it may be assumed that the bowel has righted itself—of an operation in which the surgeon opens the abdomen and removes the inner

INUNCTION

piece of intestine from that into which it has passed. The condition is an extremely grave one.

INUNCTION is a method of administering drugs by rubbing them into the skin mixed with oil or fat.

INVALID is a term applied to a person who is not robust or who is disabled by illness. For general management of invalids see **NURSING**, and for their nourishment see **DIET** and **FOOD**. See also under the head of various diseases.

IODIDES are salts of iodine; those which are especially used in medicine being the iodide of potassium and iodide of sodium.

Iodides are much used in chronic bronchitis and rheumatism, and also to aid absorption of the unhealthy tissues which are often found as a late result of syphilis.

IODINE is an element which is found largely in seaweed.

Externally iodine is much used as a counter-irritant. (See **BLISTERS** AND **COUNTER-IRRITANTS**.) For this purpose the strong tincture of iodine (10 per cent) is commonly used if a few applications are to be made; or, if repeated applications are to be made for some time, the weaker tincture of iodine ($2\frac{1}{2}$ per cent strength) is employed. Iodine ointment is also much used for rubbing into the skin. One or other of these preparations is very frequently used to paint over glands enlarged by various causes, in order to bring about their decrease in size. Tincture of iodine is painted over the chest in cases of pleurisy to aid absorption of the pleuritic effusion, and to relieve pain. The strong tincture is much used for painting over and cleansing dirty wounds on work-soiled hands or other parts. It has the advantage of checking bleeding, acting as a powerful antiseptic, and producing a protective pellicle over the surface of the wound. For its antiseptic properties it is also used to sterilise the skin by painting over the

IRITIS

surface before surgical operations. Either the strong or the weak tincture is much used to paint over the surface in cases of chronic inflammation of bones, joints, and bursæ, and the weak tincture is a useful preventive of chilblains, applied while the hands are still red before the skin has begun to crack.

Internally iodine dissolved in glycerin is much used as an astringent application in chronic inflammatory conditions of the throat and tonsils. Small doses of the weak tincture (2 to 5 drops) are administered to relieve vomiting in cases of sea-sickness. Similar doses are administered over a prolonged period in cases of goitre.

IODOFORM is a saffron-coloured crystalline substance used for application to ulcers and discharging wounds.

IODOLYSIN is the name of a compound of thiosinamin and iodine used by hypodermic injection in the treatment of rheumatism, rheumatoid arthritis, and other joint conditions.

IPECACUANHA, **IPECAC**, or **HIPPO**, is the root of a Brazilian shrub. It contains an alkaloid 'emetine' which produces vomiting.

Ipecacuanha wine forms a favourite ingredient of cough mixtures, on account of its stimulating effect upon the mucous membrane and nervous centres. It is given, especially in the bronchitis of very young children, in 5-drop doses. It is also used as an emetic in doses of one teaspoonful for a young child, or one tablespoonful for a grown-up person.

IRIDECTOMY means an operation by which a piece is removed from the iris, and the pupil of the eye thereby increased in size.

IRISH MOSS (see **CARAGHEEN**).

IRITIS means inflammation of the iris.

Symptoms.—The most marked symptom is pain situated either in the eye itself or more commonly in the forehead above it. There may be much watering of the eye, and bright

IRON

light always occasions more or less distress. The eye is red around the margin of the iris, and for this reason the condition is often mistaken for inflammation of the conjunctiva covering the eye—a much less serious condition. (*See EYE, DISEASES OF.*) Dimness of vision is present, and, particularly in chronic cases, may for long be the only sign. When one looks at the eye closely, one notices that the iris has lost its lustre, and the pupil is generally narrow, and ceases to vary in size in different lights. An acute attack of iritis generally lasts some weeks even when treated, and, if the condition be not carefully treated, the sight may be much impaired or lost as the result of opacities in the lens or cornea.

Treatment.—Rest of the eye is of the highest importance. To effect this, all reading and other near work, even with the unaffected eye, must be given up. Atropine is dropped into the eye, usually in a solution which contains 2 or 4 grains to each ounce of water. As a still further protection, dark glasses are worn. Sometimes a blister is applied to the temple to afford relief from the pain. The application of warmth to the eye, the administration of aspirin, and confinement to bed are also helpful. The disease which is responsible for the iritis is at the same time treated by suitable remedies.

IRON is a metal, and is not only necessary in small amount in the food, but is used both in the form of a finely reduced powder and of various of its salts, as a drug.

For young women with anæmia, Bland's pill, containing carbonate of iron, and iron in colloidal form (iron jelloids) are favourite forms, and large doses are taken. (*See ANÆMIA.*) For persons recovering from fevers and other weakening diseases, the citrate of quinine and iron is often used. The perchloride of iron, which has a very astringent action, is employed frequently to check diarrhœa, and the

ITCHING

iodide is a form frequently administered to scrofulous children.

ISOLATION in infectious diseases is an important procedure, applied both to persons who are themselves sick and to persons who have come in contact with them, technically known as 'contacts' or 'suspects', and who may later develop the disease. (*See INFECTION.*)

ITCH is a popular name for **SCABIES**, a skin disease caused by a minute parasite, which resembles the cheese-mite in appearance.

Symptoms.—The person complains of great itchiness and heat, felt particularly soon after he goes to bed, and preventing sleep in the early part of the night. The spaces between the fingers, the backs of the hands, and the front of the wrists are red and scabbed as the result of scratching, or the surface in these localities may even be much inflamed.

Treatment.—This is simple, for an ointment containing one part of sulphur ointment, one of lanoline, and one of vaseline, rubbed into the affected parts night and morning, before the fire, quickly destroys the parasite and cures the condition. The skin should be vigorously scrubbed with soap and dried before the ointment is applied. Whatever remedy be employed, the gloves, underclothes, bedding, etc., must be baked or fumigated, otherwise the mites left in them may renew the itch.

ITCHING is an unpleasant condition of the skin-surface which in some cases is so constant as to become unbearable.

It is due to many different conditions, some of which are local and can be easily removed. Some are general, while occasionally the condition becomes so chronic and the skin so changed by scratching, etc., that it is incurable.

Treatment.—Warm baths, containing soda or bran, are among the most soothing applications for general itching. It is essential that a proper ex-

ITCHING

amination should be made as to the functions of the internal organs in cases where itching is a chronic complaint. In diabetic cases the surest remedy to prevent the itching due to incrustation of sugar is to wash frequently, with water containing a little bicarbonate of soda, the parts which are most apt to be wet by urine or by perspiration. In addition to this washing, occasional sponging with Goulard's water gives temporary re-

IVORY

lief. Other useful and simple local applications are carbolic lotion (1 in 40), coal-tar water, and a solution made from one-quarter ounce of tobacco steeped in a pint of hot water, any of which may be sponged upon the affected part. Another useful application for a limited surface is menthol (1 part) in olive oil (10 parts).

IVORY, or **DENTINE**, is the hard material which forms the chief bulk of the teeth.

JABORANDI, or **PILOCARPUS**, is the leaf of a South American plant which contains an alkaloid, pilocarpine. When taken internally, pilocarpine causes a flushing of the skin, followed by profuse perspiration. Pilocarpine is used in several skin diseases; and, as a remedy for baldness, infusion of jaborandi forms the chief constituent of many hair-washes.

JALAP is the bulb of a Mexican plant.

Jalap is used as a purgative, generally in cases where dropsy is present, in order to relieve this. It is included in various pills, but the commonest form of administration is by compound jalap powder, of which a dose of about 40 grains is given to produce a marked effect.

JAUNDICE is a yellow discoloration of the skin due to the deposition of bile pigment in its deeper layers. The condition is really a symptom only of some obstruction to the normal excretion of bile from the liver; but, both owing to the fact that the appearance presented by a jaundiced person is so striking, and because this symptom occurs more or less constantly along with a group of others, jaundice is usually considered as a disease by itself.

Causes.—When the bile cannot escape into the intestine in the usual way, it is absorbed by the blood- and lymph-vessels, and some of its constituents are deposited in the various tissues throughout the body. Some obstruction to the outflow of bile is, therefore, a necessary condition, and this obstruction may either exist in the bile-ducts, which convey the bile from liver to intestine, or it may be caused by some disorganisation in the liver which prevents the bile, formed by the liver-cells, from finding its way to the bile-ducts at all. The tint of the jaundice has no relation to the severity of the cause. Among those cases of jaundice due to obstruction

of the larger bile-ducts, some are due to catarrh of their mucous membrane (catarrhal jaundice). This may arise as the result of a chill or of eating some irritating and indigestible food, and, though the resulting jaundice may last for several weeks, it forms a trifling malady. Obstruction may be due to gall-stones, and the resulting jaundice is then a symptom of this condition. (See GALL-STONES.) In elderly persons, cancer pressing on the bile-duct is likely to be the cause, and long-continued jaundice is for this reason a serious symptom. Cirrhosis of the liver, in which the small branches of the bile-duct become compressed by the formation of fibrous tissue, may also be a cause of chronic jaundice.

Treatment.—The physician attempts, in the first place, to find out the cause of the obstruction to the outflow of bile. In old persons particularly this is occasionally a difficult matter, requiring long-continued observation of the patient. The activity of the liver must be checked as far as possible, and to this end rest in bed and the avoidance of all heavy, fatty, and highly spiced foods are necessary. The bowels must be regulated by saline purgatives, of which phosphate of soda is one of the best, taken in teaspoonful doses in hot milk or water at night or after meals. In simple cases of jaundice, when the returning yellow colour of the stools and disappearance of bile from the urine show that the bile-flow is becoming re-established, various substances, such as blue pill, euonymin, and rhubarb, are given to quicken the expulsion of bile from the system. The affected person must exercise patience in waiting for the disappearance of the yellow colour from the skin, for in marked cases it generally lasts for several weeks.

JEJUNUM is the name given to part of the small intestine.

JELLY (*see* GELATINE).

JOINTS.—A joint or articulation is the meeting-place between different parts of the skeleton, whether bones or cartilages.

JOINTS, DISEASES OF.—The larger joints, on account of their exposed position, are subject to constant injuries. The knee is the joint most frequently diseased, and after it, in order, the hip, ankle, and elbow. Penetrating wounds of joints are among the most serious injuries, short of damage to vital organs, that can occur. A poisoned wound of a joint cavity is so difficult to render clean that such an accident is highly dangerous to the limb, and often even to life. The following are some of the most important conditions from which joints suffer.

SYNOVITIS is the name given to any inflammation of the membrane lining the joint cavity. It may be acute or chronic.

Symptoms.—In acute synovitis following usually upon some injury, the synovial membrane becomes inflamed, thickened, and secretes an excessive amount of fluid into the joint. As a result, the joint becomes painful, red, swollen, and hot to touch. It is usually kept more or less bent, and is painful to straighten and to handle. If the synovitis remains of a simple nature, these symptoms last some days and then gradually subside. Or the condition may persist for a long time, getting better for a little and then relapsing; or it may become chronic, and, while the heat and redness disappear, the joint remains distended with fluid and stiff. This condition most frequently affects the knee, and is then popularly known as 'water on the knee'.

Treatment.—In the early stages, complete rest of the joint, the limb being placed on a splint, together with the application of cold or of warm fomentations to soothe the pain, are alone necessary. Later, massage and compression of the

joint by an elastic bandage aid the absorption of the fluid and dispel the stiffness. When the condition becomes chronic, counter-irritation by iodine, blisters, etc., is necessary, and the joint is often punctured to draw off the fluid.

TUBERCULAR DISEASE of a joint is of great frequency and importance. It is popularly known as 'white swelling', on account of the characteristic appearance of the affected joint. In many cases there are other manifestations of the disease, the lungs, for example, being affected, or the glands of the neck enlarged. Tuberculosis of the joints is much commoner in children than in older persons, and is attributed to infection with tuberculous milk.

Symptoms.—The condition is very chronic, begins insidiously, sometimes being dated from a slight accident, and progresses slowly; it may even last for years. Slight stiffness, wasting of the muscles in the affected limb, and pain and tiredness brought on by slight exertion, are the earliest symptoms. The joint later assumes a characteristic appearance, becoming enlarged, losing the natural hollows about it, and appearing white and glistening, with large veins showing through the skin. The wasting of muscle above and below the joint causes it to look still more enlarged than it really is. Gradually the use of the limb is lost, and, if the lower limb be the one affected, the person takes to bed, and at the same time the general health deteriorates. Later in the disease, when the joint is becoming thoroughly disorganised, starting pains at night, which waken the sufferer as he is dropping off to sleep, become troublesome. If the condition remains untreated after this stage is reached, an abscess forms in the joint and bursts through the skin, hectic fever develops, and the patient, if untreated thereafter, may slowly sink and die.

Treatment.—In early cases of tuber-

JOINTS, DISEASES OF

cular disease, rest of the joint is essential, the joint being fixed by a splint or other apparatus so that it cannot move to any great extent. As in all other tubercular conditions, exercise and fresh air are of great importance, and therefore, when the disease affects a joint in the lower limb, some apparatus is devised whereby the patient can move about while the joint is still rigid. For the hip and knee this is secured by Thomas's splints, and for other joints by various pieces of apparatus. Fixation is sometimes effected by plaster bandages, though these have the great disadvantage of leaving the joint stiff and the limb weak. When a joint is thus fixed for a space of weeks or months, stiffness is apt to ensue, but the freedom of the joint must often be sacrificed with the object of checking the disease. Care is taken that the position in which the joint is fixed shall be the most useful one, the knee being kept straight, the ankle at a right angle, the elbow a little more bent than a right angle, as the ease may be. Sometimes in the case of the hip, especially if the pain be severe, the child is put in bed, and extension by means of a weight applied to the limb; for by this means the deformity is corrected, the joint kept at rest, and the pressure of the diseased surfaces in the joint upon one another relieved. Massage, which is admirably adapted for the treatment of many joint conditions, is not suited for tubercular disease, while it is still advancing. Constitutional treatment must be energetically carried out, just as in the case of consumption.

Heliotherapy, which was first applied in the treatment of tuberculous joints by Koller at Leysin, Switzerland, about 1903, has in recent years attained great success. The patient's whole body is exposed to air and sun for several hours daily; a vegetable diet is administered; and the affected part is protected from too free move-

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ment, injury, or deformity by simple apparatus, which does not prevent the free access of the sun's rays. Stiffness after recovery is to a large extent avoided, partly because the sunlight prevents wasting of the muscles, and partly because the simple apparatus used permits, during treatment, movements short of producing any pain. Most bones and joints recover under this treatment, with re-formation of normally shaped, healthy bone, even when the disease has advanced to the formation of an abscess or of sinuses. The period of treatment is, however, prolonged, lasting from one year for the wrist or ankle to two or three years for the hip or spine. Of all the systems of treatment, this leaves the joint most nearly in a normal state when the disease has disappeared. It can, however, be carried out only in places where there is a great amount of sunshine without much accompanying heat, as, for example, in the High Alps, both in summer and in winter. (See CONSUMPTION.)

Operative treatment is advisable for some tubercular joints, in advanced cases. The treatment in this respect varies considerably with the social position of the patient. Those who wish to recover speedily, who cannot afford the long inaction and costly environment necessary for a rest cure, and for whom a useful limb is essential, may find it desirable to undergo an operation when the disease becomes advanced. On the other hand, those who shrink from an operation, who prefer to pass through a tedious illness, and are willing to devote a large amount of attention to their cure, may generally rest assured that, under constitutional treatment, the majority even of discharging joints recover in course of time. The general operation performed is excision, in which the joint cavity is opened up, the diseased ends of the bones removed, all diseased synovial membrane, sinuses, etc., scraped

away, and the bones then firmly fixed in the case of the knee, or allowed to form a new joint in the case of the elbow. This operation is generally successful, if not delayed too long, in completely removing the disease and leaving the patient with a useful, although damaged, limb. When a person has been allowed to get very weak and appears to be possessed of little recuperative power, it is sometimes necessary to remove the limb.

STIFFNESS OF JOINTS may be due to various causes. It may result from spasm of the muscles around the joint in cases of early tubercular disease and of hysterical joints, or it may be due to permanent shortening in these muscles or contraction of the skin, due, for example, to a burn. Often a severe injury to the joint itself, such as a fracture of one of the bones that form it, or a dislocation, is followed by some stiffness. A very large number of slight injuries, which set up a mild degree of inflammation, are followed by some adhesion in the joint, often of a painful nature. These limit the use of the joint considerably, but, when they are broken by forcible movements of the limb, recovery and relief are immediate. These cases are specially suitable for the art of the so-called 'bone-setter'. Cases of tubercular disease which recover without operation undergo 'ankylosis', the bones being fastened together firmly by new bone or by dense fibrous tissue, and these cases should be left alone.

LOOSE BODIES IN JOINTS result from inflammation of various types. They bring on repeated attacks of synovitis, especially in the knee, and often cause sudden locking of the joint, so that for a time it is immovable. They are removed by operation.

GOUT, RHEUMATISM, AND RHEUMATOID ARTHRITIS are diseases of a constitutional nature which affect joints. (*See under RHEUMATISM.*)

HYSTERICAL AFFECTIONS OF JOINTS are not uncommon, particularly in young women, though they are occasionally found in the opposite sex. The knee and hip are most often affected, but the ankle, wrist, and elbow are also liable. The affection takes many forms: stiffness, pain on movement, swelling, weakness, wasting of the limb may be complained of, and the appearances of tubercular disease may be closely mimicked.

SPRAIN is a vague popular term indicating the result of any slight wrench to a joint. A sprain consists generally of a mild attack of synovitis, or of tearing of ligaments with effusion of blood into or round the joint. At the ankle, a twist of the foot inwards is followed by some tearing of the outer lateral ligament of the joint constituting a severe 'sprain', but a more serious accident, consisting of fracture at the lower end of the fibula, is apt to follow a wrench or twist of the foot outwards. (*See FRACTURES.*) In the knee, a sudden twist is occasionally responsible for loosening and rumpling up the inner of the two fibro-cartilages found in that joint. This accident has the awkward consequence of producing at subsequent times attacks of synovitis, or of sudden locking of the knee-joint. Behind the wrist and at the ankle, a sprain results sometimes in the displacement of some of the tendons which should be bound firmly to the bone, leading to occasional pain and a sense of weakness till the tendon happens to get replaced by another twist.

Treatment.—When a sprain is of inflammatory character, the treatment is of the nature described under Synovitis, and in the case of a bad sprain rest for a week or two may be essential. A sprain may be treated at the very beginning by applying wet compresses, or by holding the joint in a stream of cold water, which materially checks the effusion. After

JUGULAR

some time has elapsed, this form of treatment is of little use, and compression by a moderately tight or by an elastic bandage over the injured joint, together with elevation of the limb, forms a better line of treatment. When the pain is severe, fomentations of lead and opium lotion give relief. (See GOULARD'S WATER.) Massage is later of great assistance in cases of sprain to prevent stiffness of the affected joint.

DISLOCATION (see DISLOCATIONS).

BURSITIS frequently occurs over the region of a joint. The prominences of several joints are protected by large bursæ, and inflammation of these structures is sometimes mistaken for inflammation of the joint. (See BURSITIS.)

JUGULAR is a general name for

JUNKET

any structure in the neck, but is especially applied to three large veins, the anterior, exterior, and interior jugular veins, which convey blood from the head and neck regions to the interior of the chest.

JUNKET is the name of a food consisting of milk which has been acted upon by rennet. This forms a soft curd of the casein which is more easily digested than the curd which would naturally form in the stomach, and junket, therefore, forms a more easily digestible food than natural milk. If the curd is strained through muslin, whey is obtained which contains simply the water, sugar, and albuminous materials of the milk and is very easily digestible. It is therefore much used in the treatment of gastric ulcer and similar conditions.

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KAOLIN, or **CHINESE CLAY**, is a smooth white powder used as a dusting powder for eczema and other forms of irritation in the skin. It is also used internally in cases of diarrhœa due to various causes such as ptomaine poisoning, dysentery, cholera, tuberculosis. The dose is from $\frac{1}{4}$ to 1 oz., best taken in water or milk before meals. Talc, French chalk, and Fuller's earth are similar substances.

KHARSIVAN, and **NEOKHARSIVAN**, are British-made Salvarsan and Neosalvarsan. They are administered by injection into veins or into muscle, in the same doses and for the same conditions as salvarsan.

KIDNEYS are a pair of glands situated close to the spine in the upper part of the abdomen. Each is, to a great extent, covered behind by the twelfth rib of its own side.

In size each is about 4 inches long, $2\frac{1}{2}$ inches wide, $1\frac{1}{2}$ inches thick, and weighs over 4 ounces. The size, however, varies a good deal with the development, and probably with the habits of the individual. The left kidney is slightly longer and narrower, and lies a trifle higher in the abdomen than the right.

Their function is the excretion of the urine.

KIDNEY DISEASES.—The kidneys, being deeply buried in the abdomen, give little direct sign even when seriously affected, though many of the effects upon the general constitution are serious.

General symptoms.—The following are some of the general symptoms common to various types of kidney disease.

PAIN, of an aching nature, situated high up in the loins, is occasionally a symptom of inflammation of the kidneys, but pain in the lower part of the back is found in so many other diseases, and is so generally absent in serious kidney affections, that it is of

little importance as a symptom. When a stone lodges in the ureter, however, there is a very definite type of pain known as 'renal colic'. This pain is of an agonising nature, shoots down from the kidney region to the groin, and usually appears with great suddenness. Also, when a kidney becomes movable and approaches the front of the abdomen, direct pressure upon it causes a sickening sensation.

WASTING and general ill-health are prominent symptoms of diseases which cause much destruction of the substance of the kidney, and sometimes a state of bad health, which has lasted for long, is found to be attributable to chronic and advanced kidney disease, which has given no sign till careful examination reveals its presence.

The **URINE** almost invariably shows changes in kidney diseases. In acute conditions it is diminished, generally contains albumin, and may be bloody. When unusual material is present in the kidney, careful examination of the urine generally discovers traces of it in this excretion; for example, pus in the urine points to a suppurative condition situated somewhere in the urinary tract; and when a stone is present in the kidney, its nature may often be conjectured by an examination of the crystalline deposit in the urine. In chronic Bright's disease the urine is generally increased in amount, pale, and, as a rule, contains greater or less amounts of albumin.

DROPSY is a most important symptom of kidney troubles. When dependent upon some defect in the kidneys, it appears generally in the morning after sleep, and affects the loose tissues of the body, like the skin beneath the eyes, and that on the back of the hands, which become swollen and puffy.

CHANGES IN THE CIRCULATION take

KIDNEY DISEASES

place in chronic kidney disease. These changes produce pain in the chest, loss of mental power, bloodlessness, impairment of vision, and very frequently lead to apoplexy.

URÆMIA is a condition which is present in all cases where the function of the kidneys is seriously impaired. It is a general poisoning of the system by waste products which the kidneys have failed to excrete, and may be acute or chronic in type. (See **URÆMIA**.)

The most important class of diseases affecting the kidneys is that grouped together as **Bright's disease**, in which albumin is excreted in the urine and dropsy is very often present. (See **BRIGHT'S DISEASE**.) The following are some of the other important affections of the kidney.

GRAVEL and **STONE** are produced by the deposit in the urinary passages of solid substances which are naturally in solution. The commonest crystalline deposits are of three sorts: (a) urates and uric acid; (b) oxalates; (c) phosphates.

SUPPURATION within the kidney either follows upon suppuration in the lower urinary passages, spreading upwards from the bladder by way of the ureters, or infection may be carried by the blood-stream to the kidney from other regions. It is not of such frequent occurrence now as it was in the days before the use of antiseptics, when it went by the name of 'surgical kidney', owing to the frequency with which this condition followed surgical operations on the urinary tract.

TUBERCULOSIS also is frequently secondary to tubercular disease of the testicle or bladder, and the disease advances slowly, giving but little sign of its presence. It is treated by the general measures for cases of tuberculosis in other parts, viz. good food, rest, and fresh air. When it is evident from pus in the urine, a swelling in the abdomen, and other signs, that the kidney disease

KNEE

is advancing, excision of the kidney is the only operative measure which promises much success.

FLOATING KIDNEY is a condition of very common occurrence, being found in 10 or 20 per cent of all women, and less commonly in men. When the degree of movement is considerable, the condition is responsible, by its pressure upon neighbouring organs, for many obscure abdominal complaints, such as chronic obstruction of the bowels, constant pain, or inveterate dyspepsia.

Treatment.—Palliative treatment is sufficient for most cases. A tight-fitting jersey or an abdominal belt may be sufficient to give relief in many cases, particularly in stout women. Tonics, and massage or cold douches to the abdomen, are also of great benefit.

INJURIES OF THE KIDNEY are very serious, though one of these organs may be completely shattered without a necessarily fatal result if the other kidney be healthy and uninjured.

TUMORS of the kidney are not common, and, as a rule, they give little or no trouble till they have reached a large size. The most important sign they give is the presence of blood in the urine.

KING'S EVIL is a popular name for scrofula, or tubercular enlargement of glands, which was in olden times supposed to be curable by the touch of the royal hand. (See **CONSUMPTION** and **SCROFULA**.)

KNEE is the joint formed by the femur, tibia, and patella. The cavity of the joint is very intricate, and it consists really of three joints fused into one, but separated in part by ligaments and folds of the synovial membrane. The ligaments which bind the bones together are extremely strong. Two fibro-cartilages are interposed between the surfaces of tibia and femur at their edge.

A comparatively slight but very troublesome condition frequently

KNEE

found in the knee consists of the loosening of one of these fibro-cartilages, especially of that on the inner side of the joint. The cartilage may either be loosened from its attachment and tend to slip beyond the edges of the bones, or it may become folded on itself. In either case it tends to cause locking of the joint when sudden movements are made. This causes temporary inability to use the joint until the cartilage is replaced by forcible straightening, and the accident is apt to be followed by an attack of synovitis, which may last some weeks, causing a certain amount of lameness with pain and tenderness especially felt at a point on the inner side of the knee. This condition can be relieved by wearing for a prolonged period of some months a bandage with pad which presses upon the inner side of the joint, or it may be more quickly remedied by an operation to remove the loose portion of the cartilage.

KOLA

KNOCK-KNEE, or **GENU VALGUM**, is a deformity of the lower limbs in such a direction that when the limbs are straightened the legs diverge from one another. As a result, in walking, the knees knock against each other. Sometimes one knee only is affected, more commonly both, or sometimes one knee is bent in, the other bent out.

Treatment.—In early life a child should be kept off his feet, a splint applied to the leg, and the condition of rickets treated, if present. In older patients an operation is necessary, consisting in the division of the femur from the inner side with a chisel, after which the broken bone is carefully set, so that when union takes place the limb is straight.

KOLA is the nut of a tree growing in various parts of Africa. It contains caffeine, and its action is a stimulating one, almost identical with that of tea or coffee (*see* **COFFEE**).

L

LABIUM is the Latin word for a lip or lip-shaped organ.

LABOUR, or PARTURITION, often popularly spoken of as the 'confinement', is the act of bringing forth young, and forms the end of the period of gestation or pregnancy during which the new individual is nourished from the maternal body.

It is difficult to define an absolutely *normal labour* because individual labours differ so much in small details. Generally speaking, however, a 'normal' labour is one in which the vertex or crown of the child's head is born first, and the whole process ends favourably to mother and child within twenty-four hours, and without any operative interference. In the case of a first baby the confinement usually lasts from fifteen to twenty hours, while the births of second and subsequent children tend to become progressively shorter processes. There are, of course, considerable variations in individual cases from these general statements. The majority of confinements end between midnight and 6 A.M. In 96 per cent of all cases the vertex of the child's head 'presents' (that is, leaves the womb and descends through the vagina to the exterior first). In some cases, owing to a faulty position of the head or to the presentation of the child's face, the labour is considerably delayed, while for various reasons operative assistance may be necessary, in which case the labour is known as an 'instrumental' one. The child may present quite another part than the head, the second most frequent presentation being the breech. A rarer and more serious presentation is a 'transverse presentation' or cross-birth, where the child lies obliquely across the womb. In these cases skilled assistance is specially necessary for the sake of both mother and child, and in the latter case assistance is impera-

tive if the mother's life is to be saved. Finally, various complications, such as deformities of the mother and child, an excessive amount of bleeding, the birth of twins, and various general conditions of the mother, such as heart or kidney disease, convulsions, etc., may influence the progress of the labour to an extreme degree.

Stages of labour.—The process of labour is naturally divided into three stages. The *first stage* is that of dilatation of the neck of the womb to permit of the subsequent descent of the child. This is ushered in by the onset of the 'pains' caused by the powerful intermittent contractions of the muscular wall of the womb. At first the pains come at considerable intervals—ten to twenty minutes—but as time passes the intervals become shorter and the pains become stronger. This stage is much the longest but is at the same time the least liable to complications or dangers either to mother or child. It is sometimes accompanied by sickness and vomiting, which are on the whole favourable in so far as they tend to shorten the first stage. The full dilatation of the mouth of the womb is usually accompanied by the rupture of the amnion, the membrane containing the fluid in which the child moves, and the sudden escape of the amniotic fluid or 'waters'.

The *second stage* is the stage of expulsion of the child, during which the child's head, followed by the body and limbs, descends through the bony girdle of the pelvis and passes down through the vagina to the exterior. This process usually occupies three or four hours in a first labour, but, in the case of a woman who has had several children before, it may occupy a much shorter time. During its passage through the pelvis, the child's head goes through certain movements by which it adapts itself

to the alterations in the shape of the pelvic canal as it passes down. The size of the head of an average child is such that there is just room for it to pass through the pelvis and no more. Accordingly the head is liable to be considerably pressed upon during this stage of labour, and this pressure manifests itself in the 'moulding' of the child's skull. This moulding, which is rendered possible by the softness of the bones and by the presence of spaces between the bones, is a valuable provision of nature, and enables the head to pass down with the minimum of damage to the child and to the mother. In most cases the moulding disappears in the first day or two after birth, but in extreme cases, where the labour has been long and difficult, some degree of moulding may persist throughout life. The second stage is one of strenuous muscular exertion, as not only the muscular wall of the womb but the abdominal muscles and the diaphragm are all involuntarily called into play to aid the expulsion of the child. Pains are more severe, but at the same time the patient has a consciousness that she is making progress, and this sometimes makes them more easily tolerated than the pains of the first stage. It is towards the end of the second stage that an anæsthetic is usually administered, the actual birth of the head being the time of greatest agony. Immediately thereafter there is a pause for a moment or two, and then the child's body is born, thus completing the second stage of labour. As soon as it is born the child usually cries loudly, and in doing so establishes the function of respiration. The tying and cutting of the umbilical cord finally sever the child's vital connection with its mother.

The *third stage* is the stage of delivery of the afterbirth. It begins immediately the child is born and rarely lasts more than half an hour. It is associated with the loss of a

certain amount of blood, but this is not usually more than about 15 oz. or thereby. The great danger is from excessive hæmorrhage associated with the separation of the afterbirth from the wall of the womb, and although the stage is much the shortest, yet this danger makes it imperative that it should be conducted with the greatest care.

Management of labour.—In the absence of skilled assistance a normal labour will in all probability conduct itself to a successful issue, but it is always desirable that trained assistance should be obtained, both for the comfort as well as for the safety of the mother and the child. Obstetrical complications have a habit of arising suddenly and sometimes unexpectedly.

Where trained assistance is not at once available, the untrained person can still do much to help the prospective mother. As soon as the labour begins the patient should, if possible, have the lower bowel washed out with a soap and water enema, and if there is time it is advisable for the patient to have a warm bath, or at least to have the genital regions thoroughly washed with soap and water. The bed upon which she is to be delivered should be prepared with a mackintosh sheet if possible, or failing that, one or two sheets of glazed brown paper, placed across the middle of the bed and drawn well over the right-hand edge of it. A draw-sheet should be placed over this which can be changed afterwards. The clothing for the infant should be hung before the fire to be aired and warmed, and provision should be made for an ample supply of hot water and clean basins for the doctor or nurse who should have been sent for. Ligatures should be prepared for tying the umbilical cord, and these are best made of 3-ply linen thread twisted together and knotted at the ends so as to form a ligature of about ten inches in length. Two of these are required, and should be

sterilised by being boiled. The patient may with advantage remain up, either sitting or moving about her room as may be most comfortable for her, during the first stage; but when she feels fatigued and desires to lie down, and in any case when the membranes rupture and the 'waters' escape, she should lie down on the bed on her left side.

During the second stage the patient will tend involuntarily to hold her breath and press down during the pains, and this 'down-bearing', as it is called, is helpful and should be encouraged, as it will expedite delivery. It is a mistake to urge a woman to bear down during the first stage, as it does no good and merely exhausts her strength. It helps the patient to be given something to hold on to during the down-bearing pains of the second stage, and it is a customary thing to tie a roller towel to the head of the bed and give her that to pull upon. This enables her to use her strength to the greatest advantage. As soon as the child's head is born its eyes should be gently wiped clean with a little pledget of cotton-wool or a clean soft linen handkerchief moistened in clean boiled water. After the child is born the cord should not be ligatured for two or three minutes until the pulsation in it is beginning to cease. One of the linen ligatures should then be tied tightly round the umbilical cord at a distance of about two inches from the child's navel. The other should be applied a few inches nearer the mother. With a clean pair of scissors which has been boiled, the cord should then be divided between the two ligatures. It is essential to make sure that there is no bleeding from the child's end of the cut umbilical cord. The infant should then be wrapped in a soft flannel or shawl and laid aside in some warm place until arrangements can be made for bathing it. After the delivery of the child there will be an interval of some minutes before the

uterine contractions start once more, and as a rule only a few contractions are needed to bring about the expulsion of the after-birth or placenta. This should be placed in a basin with some clean water and kept for inspection by the doctor or nurse.

All that now remains to be done is to wash the patient by gently swabbing her with pledgets of cotton-wool wrung out of clean boiled water, the hands of anybody who comes in contact with the patient having been previously most carefully and scrupulously scrubbed. A clean pad of cotton-wool, preferably scorched in front of a hot fire to sterilise it, should then be placed over the genitals and a firm binder drawn round the hips and over the lower part of the abdomen. A clean bolster slip serves this purpose admirably. After the confinement is over, the patient should be encouraged to sleep, or at least to rest quietly, and anything in the nature of excitement is to be avoided. For this reason friends and neighbours should as far as possible be excluded until the patient has had a good sleep.

Dangers of labour.—These may arise in connection with the presentation or position of the child, with the uterus or maternal pelvis, or from the general condition of the mother's health. **ABNORMAL PRESENTATIONS** are relatively uncommon. The most frequent is a *breech presentation* ($3\frac{1}{2}$ per cent of all labours). Here the labour is apt to be slow, but while there should be no increased risk to the mother (unless the labour happens to be a first labour), there is considerably greater danger to the child. Skilled assistance should always be obtained, but in the absence thereof, the labour should be allowed to conduct itself without interference, until the lower limbs are born. These should then be wrapped in a warm flannel and gently supported, while steady pressure is applied to the top of the womb through the mother's abdominal wall. The after-coming

head is thus gently pressed down into and through the pelvis. The main risk to the child is pressure on the umbilical cord during this stage, as it lies between the head of the child and the hard bony pelvis. If this pressure is sufficient to impede the child's circulation for more than 8 or 10 minutes, the probability is that the child will be suffocated before it is born. (It must be understood that until the head is born, the child obtains the necessary oxygen by interchanges taking place between its blood and the blood of the mother in the placenta or after-birth, and that pressure on the cord prevents the circulation of the child's blood.)

Face presentations occur but seldom (0.4 per cent of all labours). Usually the mother is able to deliver herself after a prolonged and tedious labour. The outlook is tolerably good for the child and should be satisfactory for the mother. There are, however, possibilities of serious danger, and medical help should always be sought.

The most dangerous mal-presentation is a '*cross-birth*', where the child lies across the womb and the pelvis. None but an extremely premature child can be born in this position. If the condition is not corrected, the womb goes on trying to expel the child until it either becomes utterly exhausted and ceases to contract, or else it ruptures. In the former event, sufficient time may be gained before the womb starts to contract again in which to obtain skilled assistance to change the position of the child. In this way the mother's life may be saved, although the child will almost certainly have succumbed. In the second event, the shock and internal bleeding from the ruptured womb involve very grave risk to the mother's life, and delivery is impossible except by skilled assistance.

DEFORMITIES AND CONTRACTIONS of the mother's pelvis create great difficulty and may make natural labour impossible. The pelvis of

every woman pregnant for the first time should be measured by a medical practitioner prior to labour, with a view to the exclusion of any such possibility. Sometimes labour has to be induced early in these cases; in others, operative delivery at full time has to be arranged.

HÆMORRHAGE during the last three months of pregnancy, or during labour, is always fraught with serious possibilities. It is due to the premature detachment of some portion of the placenta, which in many cases is situated too low down in the womb (*placenta prævia*). In the absence of skilled assistance, all that can be done is to keep the patient quite quiet in bed with the head low. No alcoholic stimulants should be given.

Bleeding during the third stage of labour or immediately after (*post partum hæmorrhage*) can be alarming and even fatal. In the absence of skilled assistance, an attempt should be made to compress the womb forcibly by grasping it through the abdominal muscles. The foot of the bed may with advantage be raised and the patient provided with ample fresh air. Again no alcoholic stimulants should be given, as these only serve to increase the bleeding. Very hot applications to the vulva may help, and the doctor or nurse may administer a hot vaginal douche. (See DOUCHE.)

CONVULSIONS in association with pregnancy or labour, or occurring immediately after labour (*eclampsia*), constitute one of the most grave complications. Medical advice should be obtained without fail, and in the absence of such, the patient should be kept absolutely quiet in a darkened room, surrounded with blankets and hot-water bottles to stimulate the action of the skin. The bowel should be washed out thoroughly with repeated enemata of plain warm water, and if the patient is conscious and able to swallow, liberal doses of purgative medicine should be given.

LACTIC ACID BACILLI

No food either solid or liquid should be given. The actual convulsion should be treated on the ordinary lines, and if labour ensues, it also should be treated on the ordinary lines.

PUERPERAL INFECTION is the most frequent and one of the most serious complications of labour. This is in essence the same as the infection of a wound, there being always a large raw surface in the interior of the uterus (the placental site), and in most cases innumerable small lacerations of the birth canal. Any of these may be invaded by bacteria which give rise to general blood-poisoning. In some cases these organisms are present in the mother's system before labour, but in others they may be introduced in the course of the manipulations necessary to effect delivery. It is for this reason that scrupulous surgical cleanliness ought to be a governing principle in the management of every labour. The condition shows itself some three to five days after delivery by the presence of high temperature, quick pulse, perhaps shivering fits, and sometimes foul-smelling discharge from the genital tract. Medical advice should always be obtained, but the outcome of this grave complication depends more upon the patient's general powers of resistance than upon any special treatment. Careful nursing, simple nourishing food, and plenty of fresh air are most important. (See **PUERPERAL FEVER**.)

LACTIC ACID BACILLI, which are issued in various forms, as tablets, in fluid, etc., are added to fresh milk, allowed to act upon it in a warm place for several hours (according to the degree of sourness desired), and the milk is then consumed with the active bacilli. These, after a course of such treatment, come to replace the bacteria naturally found in the intestines, and are supposed to be less injurious to the system. While the idea, with which they were introduced,

LAUGHING-GAS

of lengthening life, is fanciful, sour milk forms a healthy article of diet; and the bacilli, which are harmless, have, in some cases of intestinal disease or of rheumatism, a highly beneficial action. Buttermilk has a similar effect.

LAMENESS (see **JOINTS, DISEASES OF**).

LANOLINE is a fat derived from the wool of the sheep. It is much used for ointments because it does not become rancid, and because it has a special power of penetrating the skin. It is very sticky, and for use is mixed generally with an equal quantity of vaseline to make it softer.

LAPAROTOMY is a general term applied to any operation in which the abdominal cavity is opened.

LARYNGITIS means inflammation of the larynx. (See **THROAT, DISEASES OF**, and **CLERGYMAN'S SORE THROAT**.)

LARYNGOSCOPE is an instrument consisting essentially of a small mirror set at an angle on a long handle, and designed for examination of the throat.

LARYNX is the organ of voice, and also forms one of the higher parts of the air passages. It is placed high up in the front of the neck, and there forms a considerable prominence on the surface.

The larynx is almost 2 inches in height, and forms a sort of box, well protected in front by cartilages, rather more open behind, and communicating above with the throat at the root of the tongue, below with the wind-pipe. The vocal cords, whose vibration produces the voice, run from before backwards, about half-way up the larynx.

LARYNX, DISEASES OF (see **THROAT DISEASES**).

LAUDANUM is the popular name for tincture of opium. It is usually given in doses varying from 5 to 15 drops, but should not be given to children. (See **OPIMUM**.)

LAUGHING-GAS is a popular name

LAXATIVES

for nitrous oxide gas which is used as an anæsthetic for short operations.

LAXATIVES (*see* PURGATIVES).

LEAD-POISONING, in its chronic form, is apt to affect those who come in contact with lead or its salts, either in the production of these or in the course of their use in various arts and manufactures. Thus lead-smelters, plumbers, typefounders, compositors, file-makers, pottery workers who use lead in glaze, painters, dyers, above all, those who make white-lead, and also persons following various other callings, are liable to suffer. Lead may also be introduced into the system through the food, for example, drinking-water is sometimes contaminated by lead which it has dissolved off the pipes through which it passes, or tinned fruits may dissolve lead out of the solder with which the tins are sealed, or cider, made in leaden presses, may so readily take up lead that 'Devonshire colic' was once a name given to lead-poisoning occurring in this part of the country, where cider forms a favourite beverage.

Symptoms.—Among the early symptoms of a chronic and insidious case are constipation, muscular weakness, and pallor of the skin. A blue line on the margin of the gums, due to deposit of lead sulphide in this locality, is also an important sign of the condition. Colic of a very painful nature, affecting the centre of the abdomen and lasting often for several days at a time, appears and forms one of the most prominent symptoms in almost every case.

Treatment.—With regard to workers in lead and its salts, Government regulations have been introduced which very effectively protect them. For example, personal cleanliness in washing the hands and changing the clothes before partaking of meals, the use of respirators by those who come in contact with white-lead dust, the provision of exhaust flues and electric fans beneath the tables at which pottery glazers work, and

LEUCOCYTHÆMIA

the use of Epsom salts or lemonade containing sulphuric acid to render innocuous any lead accidentally taken into the stomach—these and other measures confer a great degree of protection upon those engaging in these otherwise dangerous trades.

LEADERS is a popular name for the tendons or sinews at wrist, ankle, etc. (*See* TENDON.)

LEG (*see* DROPSY, FRACTURES, KNOCK-KNEE, VEINS, DISEASES OF, etc.). This term is generally applied to the whole lower extremity but, properly speaking, includes that part between the knee and ankle joints.

LEPROSY is a chronic disease which affects particularly the skin, mucous membranes, and nerves, and leads to loss of vitality in the affected parts to which the diseased nerves are distributed, with consequent swellings of the skin, ulceration, and loss of the parts of the body.

LEUCOCYTES is the name applied to the white or colourless corpuscles found in the blood and lymph. They increase in numbers in cases where inflammation is present.

LEUCOCYTHÆMIA, or **LEUKÆMIA**, is a disease of chronic type, in which the number of white corpuscles in the blood is permanently increased. The disease is also characterised by great enlargement of the spleen and changes in the marrow of the bones, or by enlargement of the lymph glands all over the body.

Treatment.—Fresh air, good diet, and rest are essential. No drug or other agency has been found which will cure the disease, though it sometimes abates for some time spontaneously, and though arsenic and benzole have been found to check it, temporarily. Recently the application of X-rays or of radium to the abdomen and to the limb bones has been tried, and has been successful, in some cases, both in reducing the size of the spleen and in improving the condition of the blood and thus prolonging the patient's life.

LEUCORRHOEA

LEUCORRHOEA (*see* WHITES).

LICE (*see* INSECTS).

LIGHT TREATMENT is carried out by exposure to sunshine, which is most efficient, or, in places where the sun is obscured, by brilliant forms of artificial light.

SUNLIGHT TREATMENT, or **HELIO THERAPY**.—Sunlight is essential to the well-being of all living things, both vegetable and animal. In the smoke-laden towns of Britain, some 95 per cent of the beneficent efficiency of the solar rays is filtered out by moisture, dust, and smoke. This has a specially harmful effect upon child life, and various disabling diseases, such as tuberculosis and rickets, are traceable in part to lack of sunlight. On the other hand, in the clear air of high mountains, especially over snow, which acts as a reflector, the ultra-violet rays are at a maximum. Sunlight treatment is therefore specially carried out at certain places in the High Alps, or at the seaside, the greater part of the body being exposed to the sun's rays for several hours daily. Pigmentation gradually results, and the patient's powers of resisting disease are greatly raised. This result can be attained, not only in persons going about, but even in persons confined to bed by such conditions as tuberculosis. In these cases great benefit is obtained by lying out in the open air, exposed to the sun's rays, but protected from wind and bad weather. (For further details see **JOINTS, DISEASES OF**.) In hospitals and similar institutions, 'vita' glass, which does not obstruct the ultra-violet rays of the sunlight so much as ordinary glass, is often used for glazing windows, verandahs, etc.

SUN-BATHS have also been found useful in obesity, in diabetes, and in gout and other diseases associated with the formation of uric acid. They are taken, as a rule, at health resorts, where the naked skin is exposed to the direct beams of the sun

LIGHT TREATMENT

in the open air, and frequently accompanied by exercises.

ARTIFICIAL WHITE LIGHT TREATMENT.—Owing to climatic conditions, sunlight treatment is often impracticable, but similar results can be obtained by artificial means.

Electric light, derived from incandescent or arc lamps, possesses properties very similar to those of sunlight. In both of these, heat and luminous rays predominate, but there is a certain proportion of ultra-violet rays. Electric light cabinets, in which the person sits exposed to brilliant light and heat till he sweats copiously, are of great value in the treatment of rheumatic diseases, fibrositis, neuritis, lumbago, etc., as well as anæmia, nephritis, skin diseases, and corpulence.

ULTRA-VIOLET RADIATIONS stimulate the natural defensive powers of the body and enable it to combat disease. The effect produced is greater, in proportion to the area of the body exposed to the rays. Several patients can be treated at one time, seated round a large arc-lamp at a distance of about three feet, stripped to the waist.

An arc-lamp at 100 volts pressure, with arrangements to treat four patients at once, gives fair results. Smaller arc-lamps have also been devised, but these all seem to lack penetrative power.

In addition to the original Finsen lamps, the mercury vapour lamp, and the Tungsten arc-lamp, which gives a very high proportion of ultra-violet rays, are favourite forms. In the use of these, the patient's eyes are protected by wearing coloured glass goggles. A few minutes' exposure at a time is usually sufficient.

Excellent results have been obtained by ultra-violet radiation in the treatment of lupus and other forms of tuberculosis. Other chronic forms of skin disease, such as psoriasis, acne, boils, eczema, and seborrhœa often

LIGHTING AND WARMING

yield to it. It is of great use in hastening the cure of septic skin diseases, such as ulcers. Ultra-violet rays are useful in the treatment of rheumatic conditions, but a better result in such cases is got from their combination with heat rays, as mentioned above. As a stimulant, ultra-violet radiation has been used in a variety of depressed states of health, both physical and mental, such as in cases of neurasthenia and high blood-pressure, and for weak or rickety children, who are often treated in large numbers at the Welfare Centres of cities.

LIGHTING and WARMING.—The chief points of medical importance connected with light and heating concern the effects upon the eyes, and the presence or absence of poisonous gases in the air.

Sunlight is of course the best illuminant, and in schools, offices, etc., the position of those working at desks should be arranged so that the light falls from behind, or from behind and to the left, and is not reflected straight up into the worker's eyes. Abundance of light, properly placed, is important, since cases of neurasthenia may be gradually produced by habitual strain of the eyes in a bad light.

Open fires afford a very healthy but wasteful source of warmth, which also helps ventilation.

Closed stoves act mainly by causing a current of warmed air to pass through the room, so that the air becomes uniformly heated after a time. They have the advantages in offices, warehouses, etc., of heating the whole space more uniformly than open fires, and of economising fuel. They diminish the moisture of the air, and thus cause dryness of the skin, crispness of the hair, and a feeling of general discomfort, which is avoided by placing water in a wide shallow dish on the stove or at various places in the room.

Gas light and fires are used in various ways. All gas fires, like stoves,

LIGHTING AND WARMING

dry the air, which requires therefore a supply of water as above described. The gas now supplied in most cities consists chiefly of **WATER GAS**, which is formed by passing steam through incandescent coke, and contains nearly 50 per cent of carbon monoxide. This gas is excellent for use with incandescent mantles, by which it is completely consumed, and for heating and cooking in gas fires. It is, however, excessively poisonous.

Any burner or fire consuming gas should be ventilated by a wide flue leading to the outer air; this both prevents fouling of the air and, in the event of the gas escaping unburned, avoids risk of poisoning by carbon monoxide.

Lamp-light by burning oil is much used for illumination in country places. It is a healthy light when sufficiently bright; but, like unventilated gas stoves, lamps pollute the air with carbonic acid, though the great danger of gas, which is poisoning by carbon monoxide, is not present in the case of oil lamps.

Hot-air furnaces form a healthy system often used to supply warm air from a heating-chamber in the basement of buildings. The air is introduced through apertures in the floors, but should be moistened as in the case of stoves.

Hot-water installations form another system of central heating. This type of heating has no prejudicial effect on the air, and is eminently suited for buildings with much space in corridors, halls, etc.

Electricity is for lighting purposes by far the healthiest system obtainable. On animals and plants the electric light has the same stimulating effect, though weaker in degree, as daylight, and it is free from any polluting or drying effect on the air. As a warming agent electric radiators require no ventilation and have no hurtful action, but the small amount of heat produced, compared with the cost, hinders their extensive use.

LIGHTNING PAINS

LIGHTNING PAINS felt, as a rule, down the thighs, constitute an important symptom of locomotor ataxia.

LIME WATER, prepared from slaked lime, has a very wide use, being mixed with milk administered to invalids and children in order to make the curd less hard and so render this food more easily digested, and also in order to exert a soothing action upon the stomach when there is a tendency to vomit. For this purpose two or three tablespoonfuls are generally added to a tumblerful of milk. As an astringent in diarrhœa, lime-water is too weak, and chalk mixture is generally used in doses of two or three tablespoonfuls for an adult, and one or two teaspoonfuls for a young child. Various preparations of lime, particularly phosphate of lime and hypophosphite of lime, are used as tonics, especially for growing children, in whom they possibly aid bone-formation, and in persons whose nervous system is debilitated. Parrish's syrup, which contains phosphate of lime and iron, and Fellow's syrup, which combines with hypophosphite of lime the tonic properties of quinine and strychnine, are well-known remedies in these conditions.

Calcium lactate is a similar preparation used as a tonic for persons with chilblains and at the time of the climacteric.

LIME-JUICE is a yellow liquid obtained by squeezing lime-fruit. In common with lemon-juice, it contains a large quantity of citric acid (30 or 40 grains in every ounce of juice), and is used as a refreshing drink and as a preventive of and remedy for scurvy.

LINIMENTS, or **EMBROCATIONS**, are preparations intended for external application, generally with rubbing. Almost all are of an oily nature, and are highly poisonous, being dispensed therefore in green or blue bottles. Liniments should never be kept alongside medicines intended for internal use, because many fatalities occur

LINT

through carelessness of administration, a dose being poured out of the wrong bottle. Among the chief liniments are aconite, belladonna, and chloroform liniments, often mixed together in equal parts to form A.B.C. liniment, which is extensively used for neuralgia, rheumatism, and other painful conditions; linimentum calcis or 'Carron oil', used for burns; iodine liniment, used to paint over enlarged glands, swollen joints, etc.; opium liniment, used to apply in various acutely painful conditions; turpentine and acetic turpentine liniments, used especially for sprains, bruises, and rheumatic conditions; liniment of ammonia, popularly known as 'hartshorn and oil', used for the same purposes; and soap liniment, known also as 'opodeldoc', of like application.

LINSEED is used either as the seeds or in the form of linseed meal obtained by grinding the seeds of the common flax.

Externally, linseed meal is used in poultices (*see* **POULTICES**); and for internal use, an infusion is made from the seeds which has a wide domestic use for colds, coughs, and various internal inflammations. The infusion is made by steeping two teaspoonfuls of linseed and about half a teaspoonful of dry liquorice root in half a pint of boiling water, and allowing it to stand for two hours.

LINT was originally made of teased-out linen; now it consists of a loose cotton fabric, one side of which is fluffy, the other being smooth and applied next the skin when the surface is broken. Marine lint consists of tow impregnated with tar, and is used where large quantities of some absorbent and deodorising dressing are required. Cotton lint is impregnated with various substances, the most common being boracic lint, in which the lint is saturated with half its weight of boracic acid, and likewise stained pink to distinguish it from plain lint.

LIPS

LIPS form a pair of curtains before the mouth, each composed of a layer of skin and of mucous membrane, between which lies a considerable amount of fat and of muscle fibres.

The diseases to which the lips are liable are not numerous. *Fissures*, coming on in cold weather, form a troublesome condition often very hard to get rid of. Care should be taken not to moisten the lips with the tongue, and the cracks should be covered with a little simple ointment, such as that of zinc oxide. If they are very deep, touching with nitrate of silver is often beneficial. *Herpes* very frequently develops on the lip as a result of a cold or other feverish condition, but quickly passes off. (See **HERPES**.) *Ulcers* may form on the inner surface of the lip, usually in consequence of bad teeth or of dyspepsia, while in infants ulceration on the lips is a common sign of inherited syphilis. *Boils* sometimes form on the upper lip, and if large they produce a serious condition. (See **BOILS**.) *Cysts* of small size sometimes form on the inner surface of the lip, and are seen as little bluish swellings filled with mucus; they are of no importance. *Hare-lip* is a deformity sometimes present at birth. *Cancer* of the lip sometimes occurs, almost always in men, and usually on the lower lip. It is said to be due to the irritation set up by smoking short pipes. (See also **MOUTH, DISEASES OF**.)

LIQUOR is a solution of a drug in water. The majority of liquors are intended for internal use, but some of them are for external application only. (See also **ALCOHOL**.)

LIQUORICE is the root of a plant of Southern Europe and Asia. It is a mild laxative, but is mainly used to cover the taste of disagreeable and more powerful drugs.

LITHOTOMY is the term applied to the operation of cutting for stone in the bladder.

LITHOTRITY, or **LITHOLAPAXY**,

LIVER

is the term applied to the operation in which a stone in the bladder is crushed by an instrument introduced along the urethra, and the fragments washed out through a catheter.

LIVE-FLESH is a popular term applied to fine muscular tremors or twitchings seen especially in the eyelids and muscles of the hands. It is due usually to tiredness caused by over-use of the twitching muscles, but when persistent it may be a sign of some serious nervous disorder, such as progressive muscular atrophy.

LIVER.—The liver is a solid organ of dark-brown colour, forming the largest gland in the body. It discharges, in all probability, several functions, acting both as an excreting organ and as an elaborator and storehouse of nourishment, but its working is still only vaguely understood.

The thickness of the liver amounts, towards the right side, to over 5 inches, and its extent from side to side is considerably more. Its weight is over 50 ounces, varying with the size of the person, but making up about $\frac{1}{40}$ or thereabout of the whole body-weight. In young children it is relatively much larger, accounting, to a large extent, for their protuberant abdomen, and making up about $\frac{1}{15}$ of the whole body.

The liver has, so far as is known at present, three chief functions. The best known of these is the formation of bile, which constantly trickles from the bile-duct into the intestine, and is secreted in large amount when food is taken into the stomach, and again when the food is expelled from the stomach and passes down the intestine. From this it would seem as if the bile were concerned in digestion, but the only digestive action which it has been found to possess is to aid the pancreatic juice in breaking up the fat of the food. It is therefore generally regarded rather in the nature of an excretion of waste material than of a fluid intended to subserve useful ends.

LIVER DISEASES

The second important function of the liver is the formation of waste substances from the used-up tissues of the body, notably of urea and uric acid, which find their way into the blood and are excreted by the kidneys.

The third function is the storage of food material derived from starch and sugar.

LIVER DISEASES.—The liver may be extensively diseased without any very urgent symptoms, unless the circulation through it be impeded, the outflow of bile checked, or neighbouring organs implicated. Jaundice, which is a symptom of several liver disorders, is treated of elsewhere. Dropsy, which may be caused by interference with the circulation through the portal vein of the liver, as well as by other causes, is also considered separately. The presence of gall-stones is a complication of some diseases connected with the liver, and is treated under GALL-STONES. Diabetes in some cases is due to changes in the liver. Cirrhosis of the liver, or 'gin-drinker's liver', is a condition of hardening of this organ, which sometimes follows prolonged dyspepsia; it is found especially in persons who are addicted to alcoholic indulgence.

INFLAMMATION OF THE LIVER is not a common condition in temperate climates, but in hot countries, and particularly in India, it gives rise to the condition popularly known as 'tropical liver', which is of great importance because of the frequency with which Europeans who have been resident in that country are affected by it.

ABSCESS OF THE LIVER.—When an abscess develops in the liver, it is usually a manifestation of dysentery, appearing sometimes late in the disease, even after the diarrhoea is cured; it may also follow upon inflammation of the liver due to other causes; and abscesses may form in this organ as in other sites in cases of blood-poisoning.

LIVER DISEASES

CONGESTION OF THE LIVER is a term sometimes applied to the slighter forms of inflammation, in which the liver is said to be 'actively congested'. But the term is generally reserved for a state of 'passive congestion', quite distinct from any inflammatory process, which frequently affects the liver to a marked extent in persons who are the subject of heart disease and some forms of lung disease.

Symptoms.—The liver becomes enlarged and causes a sense not so much of pain as of fullness and discomfort in the abdomen, which may be tender to the touch. The complexion is yellowish, the tongue furred, the appetite lost, and there are often both vomiting of bile and looseness of the bowels. There may also be headache, languor, and depression of spirits. At the same time the lung or heart condition, which is responsible for the liver-congestion, gives rise to symptoms of its own.

Treatment.—The condition is usually a very chronic one. It is treated, in the first place, by alleviating so far as possible the cause producing it, and when the cause consists in faulty action of the heart, the various cardiac tonics are particularly useful. An occasional dose of calomel or blue pill, combined with some of the drugs like podophyllin or euonymin, which increase the flow of bile, will relieve the condition for a time. Chloride of ammonium, iodide of potassium, and nitrohydrochloric acid are other drugs whose use is often advocated.

FATTY DISEASE OF THE LIVER may consist of an infiltration of the cells of the liver with fat in those who eat to excess, particularly of rich, fat, or oily foods; or in wasting diseases there may be a degeneration in the liver-cells of this character. The liver is enlarged, and, though usually painless, it gives rise to discomfort and to embarrassment of breathing, particularly after meals. When due to over-eating, other organs, such as the

LIVER SPOT

heart, and the body generally are also loaded with fat. A certain amount of indigestion and constipation are often present, and a person affected in this way can offer but feeble resisting power to any disease by which he may be attacked. (For treatment see under **CORPULENCE**.)

CANCER OF THE LIVER is not uncommon, although it is rare for the disease to begin in the liver, the involvement of this organ being usually secondary to disease situated somewhere in the stomach or bowels. The symptoms are largely those of cancer in general. There is great emaciation, which increases as the disease progresses. The liver is much enlarged, and its margin and surface are rough, being studded with hard cancer masses of varying size, which can often be readily felt through the abdominal wall. Pain may or may not be present, amounting merely to a feeling of tightness, or being of a gnawing, aching, or burning character. Jaundice is a symptom due to pressure of the cancerous masses upon the bile-ducts, and, when it has appeared owing to this cause, it does not again disappear. (See **JAUNDICE**.) When due to this cause, it is apt to be deeper in hue than any other form of jaundice, and is sometimes called 'black jaundice'. Dropsy in the abdomen arises in a similar way in consequence of pressure on the portal vein. Various disorders of digestion are present, among which are loss of appetite, nausea, vomiting, and constipation, or, in the later stages, diarrhœa.

LIVER SPOT is a popular term applied to brownish marks which appear on the skin, especially of the face. This is sometimes caused by the growth of a parasite in the surface layers of the skin. It also frequently accompanies pregnancy or the presence of abdominal tumors. It may also be due simply to some long-continued form of local irritation.

LOCHIA is a term applied to the

LOCOMOTOR ATAXIA

discharge which takes place during the first week or two after child-birth.

LOCK-JAW is a prominent symptom of tetanus and is the popular name for this condition.

LOCOMOTOR ATAXIA, also called **TABES DORSALIS** and **POSTERIOR SPINAL SCLEROSIS**, is a disease of the nervous system, manifesting itself principally by disordered movements of the limbs in walking. It is due to a degenerative change in the posterior columns (sensory) of the spinal cord, this change being usually, if not always, a late result of syphilis. Locomotor ataxia is much more common among men than among women, over 90 per cent of cases being males. It is a disease of middle life, being most frequently observed to occur between the ages of thirty and fifty.

Symptoms.—Locomotor ataxia usually begins insidiously, and advances slowly. Among the earlier symptoms observed are a tendency to stagger in walking or standing, especially when the eyes are closed, disorders of vision, violent shooting pains down the limbs, decreased or perverted sensibility in various parts of the body, and disturbance of the genito-urinary functions. Among the early signs of the disease discovered by the physician, two of the most important are—loss or diminution of the knee-jerks obtained on tapping the patellar tendon; and a sluggish condition of the iris of the eye, which, though altering the size of the pupil as the eye accommodates itself for vision of near objects, fails to contract normally when a bright light falls upon the eye.

The sufferer begins to be aware that he cannot walk with the same freedom as before, and he feels as if some soft substance were interposed between his feet and the ground. His gait assumes a peculiar and characteristic appearance. In walking, he requires the aid of his vision to preserve his balance, and he therefore looks

at his feet, or rather at the ground a little in front of them, as he advances. He cannot turn about suddenly without the risk of falling, and he is apt to fall if he attempts to walk in the dark, or if he shuts his eyes. These various symptoms are the result, not of any weakness of power, but simply because the muscles do not act together. Along with this there usually exists markedly diminished sensibility to touch and to painful impressions, such as a pin prick or the approach of some unusually hot or cold object. This is noticeable particularly in the feet and legs. Sometimes the disorder implicates the upper extremities, and then the patient is unable to pick up any small object from the ground, to button or unbutton his clothing, and even sometimes to feed himself, although at the same time there is no weakness in the muscular power of the hand, which is capable of grasping as firmly as before.

The patient's efforts to walk become gradually more and more difficult, for his limbs are jerked about without restraint, while even the aid of his vision and the support of a stick are insufficient to prevent him from falling. Owing to the involvement of other nerves, the functions of several organs of the body are liable at times to be carried out in an irregular and spasmodic manner; thus the patient has attacks of violent vomiting (gastric crises), of laryngeal spasm and difficulty in breathing (laryngeal crises), of inability to retain the urine (bladder crises). Although usually progressive to a fatal termination, locomotor ataxia is sometimes arrested, particularly in its early stages, even for a period of many years.

Treatment.—In the earliest stages of the disease the remedies appropriate to syphilis, viz. salvarsan, mercury, and iodide of potassium, may be employed. A form of treatment consists in making the patient perform

several times daily, with great care, a series of co-ordinated movements, such as walking carefully along a board in the floor, putting his toes exactly on a series of marks, etc. As he becomes gradually more expert, the exercises, which were at first very simple, are made more and more difficult, and thus new paths in the spinal cord are educated to take the place of those which the disease has destroyed. As a result the symptoms may be temporarily abolished, and even patients who have become bed-ridden may regain the power of walking.

LOTION means a fluid preparation intended for bringing in contact with or for washing the external surface of the body. Lotions are generally of a watery or alcoholic composition, and many of them are known as 'liquors'. Those external applications which are of an oily nature, and intended to be rubbed into the surface, are known as liniments.

Varieties and Uses.—**ANTISEPTIC LOTIONS** include boric acid lotion and carbolic acid lotion, either in strength of 1 part in 40 parts of water, and perchloride of mercury lotion (1 part in 2000 of water). These are commonly diluted with an equal quantity of warm water immediately before use.

ASTRINGENT LOTIONS are used to stimulate sluggish ulcers, or to check discharges from inflamed mucous membranes. One of the best known of these is 'red lotion', containing sulphate of zinc. Goulard's water is also a well-known astringent lotion. Calamine lotion, containing carbonate of zinc, is used in cases of weeping eczema to stop the discharge and soothe irritation.

SOOTHING LOTIONS are used both in irritable skin conditions and to apply over inflamed joints and other deep-seated parts; as, for example, lead and opium lotion, consisting of a teaspoonful of laudanum to an ounce of Goulard's water, and lead and

LUMBAGO

milk lotion, containing a teaspoonful of Goulard's solution in an ounce of milk. Baking soda in water, in the strength of two teaspoonfuls to a pint, forms another soothing lotion often used.

COOLING LOTIONS, which relieve an inflamed or bruised part in the process of evaporating, are sometimes used; for example, weak spirit or vinegar in water.

LUMBAGO is a term applied to a painful ailment affecting the muscles of the lower part of the back, generally regarded as of rheumatic origin.

Symptoms.—An attack of lumbago may occur alone, or be associated with rheumatism in other parts of the body. It usually comes on as a seizure, often sudden, of pain in one or both sides of the small of the back, of a severe cutting or stabbing character, greatly aggravated on movement of the body, especially in attempting to rise from a sitting posture, and also in the acts of drawing a deep breath, coughing, or sneezing. So intense is the suffering that it is apt to suggest the existence of inflammation in some of the neighbouring internal organs, such as the kidneys, bowels, etc., but the absence of the symptoms specially characteristic of these latter complaints, or of any great constitutional disturbance beyond the pain, renders the diagnosis a matter of no great difficulty. The attack is in general of short duration, but occasionally it continues for a long time, not in such an acute form as at first, but rather as a feeling of soreness and stiffness on movement.

Treatment.—The treatment includes that for rheumatic affections in general (*see* RHEUMATISM), and the application of local remedies of counter-irritant nature. Of these the best are hot fomentations with turpentine or laudanum applied by means of flannel or spongio-piline to the part; or the rubbing in, if this can be borne, of liniments, such as

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those of opium, belladonna, chloroform, aconite, etc. The old and homely plan of counter-irritation by applying a heated iron to the part with a sheet of brown paper or blanket interposed is often beneficial in chronic cases, as is also, on similar principles, Corrigan's button cautery. The subcutaneous injection of morphia or atropine is called for when the attack is very severe and prevents sleep. Of late the hot-air bath, and various electrical applications, including faradisation, diathermy, and high-frequency currents, have been used with at least temporary alleviation of the pain. (*See* ELECTRICITY IN MEDICINE.)

LUMBAR is a term used to denote structures in or diseases affecting the region of the loins, as, for example, the lumbar vertebræ, lumbar abscess, etc.

LUMINAL, or PHENOBARBITAL, is a sedative drug used particularly in epilepsy, but also in neurasthenia, exophthalmic goitre, and other nervous conditions. It is given in doses of 1 to 5 grains. Luminal sodium is a soluble preparation given in somewhat larger doses.

LUNATIC is a general term applied to persons of disordered mind. (*See* INSANITY.)

LUNGS.—The lungs form a pair of organs situated in the chest, and discharge the function of respiration. (*See* RESPIRATION.) The air, which enters through the nose and passes down the throat, larynx, and wind-pipe in succession, reaches the lungs by the right and left bronchial tubes.

Each lung is roughly conical in shape, with an 'apex' projecting into the neck, and a base resting upon the diaphragm. The rounded outer surface of each is in contact with the ribs of its own side, while the heart, lying between the lungs, hollows out the inner surface of each to some extent. The bronchial tubes divide into smaller and smaller branches till the finest, about one-hundredth of an inch

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in width, end in minute air sacs. Upon the walls of these run capillary blood-vessels, so that air and blood come into close contact.

LUNG DISEASES.—The general symptoms and signs produced by disease of the lungs are mentioned under **CHEST, DISEASES OF**, and the chief affections to which these organs are liable are also treated under special headings. (*See BRONCHITIS; CHEST, DEFORMITIES OF; CHILLS AND COLDS, CONSUMPTION, EMPHYSEMA, EXPECTORATION, HÆMORRHAGE, PLEURISY, PNEUMONIA, TRADE DISEASES.*)

INFLAMMATION OF THE LUNGS is generally known as pneumonia, but may be of several different types. (*See PNEUMONIA.*)

ABSCESS OF THE LUNG is a comparatively rare condition, and consists, like abscesses elsewhere, of a collection of pus in one or more spots of the lung. It may result from an acute pneumonia which does not clear up properly, or it may be due to a wound of the lung from without, or to the presence of foreign bodies, such as buttons, pins, or fragments of food, which have been sucked down the air passages.

BRONCHIECTASIS is a condition which may come on in persons who have long suffered from bronchitis or from chronic pneumonia. The proper lung substance undergoes a certain amount of shrinkage, while at the same time the bronchial tubes become here and there distended into large cavities. These cavities are lined by mucous membrane, which continues to form a secretion, and this secretion, as it does not find a ready outlet by the bronchial tubes, undergoes putrid changes. The person therefore spits up from time to time a copious amount of foul-smelling expectoration, and the air of the room in which he lies is rendered offensive by his breath. The condition is not immediately dangerous to life, although it gradually produces deterioration of the general health, and its symptoms are those

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of an aggravated form of chronic bronchitis. The treatment is that of chronic bronchitis, and in addition the smell of the breath is kept in check by inhalations of creosote, etc. Secretion tends to collect in the bronchiectatic cavities especially during the night, and the patient usually finds that he can get rid of this secretion by adopting a special posture while he coughs, lying on one or other side with the head over the edge of the bed. In severe cases operative treatment, similar to that described under consumption, is sometimes carried out.

CONGESTION OF THE LUNGS is a term which is used in two quite different senses. The term is used to mean an attack of acute inflammation of the lung in its early stages. Sometimes such an attack is so mild in degree or so limited in extent that the patient recovers after a few days, instead of passing through the complete course of an ordinary attack of pneumonia, the illness then being described as an attack of acute congestion.

In strict medical language, the term is used to mean quite a different condition of a more chronic nature, viz. passive or mechanical congestion of the blood-vessels in the lungs due to some defect in the pumping action of the heart. Passive congestion arises under two sets of conditions. A very serious form, known as 'hypostatic congestion', arises when the heart is failing, towards the end of long-continued fevers; after severe surgical operations; and in old people who for any reason, such as the occurrence of a broken leg, are confined for some weeks to bed. It occurs in the back parts of the lungs, in consequence of the feeble heart being unable to drive out of them the blood which gravitates into these dependent parts. The other form of passive congestion occurs in connection with disorder of the mitral valve of the heart, is found throughout the lung, and often causes spitting of blood; the latter form is not so serious.

ŒDEMA OF THE LUNGS is a condition in which these organs become dropsical. It occurs both when congestion is present as the result of heart failure, and also, during Bright's disease, following dropsy in other parts of the body.

COLLAPSE OF THE LUNG occurs under several conditions. The lungs are so resilient in consequence of the elastic fibres with which they are everywhere interspersed that, if air be admitted to the pleural cavities, the lungs immediately collapse to a third of their natural bulk. Accordingly, if one side of the chest be wounded, and air be admitted (pneumothorax), the lung collapses, though, after the wound is healed, the air is absorbed from the pleural cavity and the lung quickly regains its size. Also when fluid is effused into the pleural cavity, the lung is compressed and collapses, and if the fluid be not absorbed or drawn off, within some weeks, the collapse is apt to be permanent through the formation of adhesions round the lung. Again, if anything blocks a bronchial tube, the part of the lung to which it leads collapses, since these tubes do not communicate with one another.

TUMORS OF THE LUNG are not of frequent occurrence, though cancer occasionally begins in the lung.

WOUNDS OF THE LUNG are serious both by reason of the damage they may do to this organ and by admitting air into the pleural cavity, so that the lung collapses. The lung may be wounded by the end of a fractured rib, or by some sharp body pushed between the ribs, and it may also be torn as the result of disease; for example, a consumptive and excavated lung may be perforated during a fit of coughing. If by any cause a free opening is made between the pleural cavity and air passages, immediate difficulty of breathing, due to collapse of the lung, ensues. Generally, however, the person recovers from the immedi-

ate symptoms, and, if the perforation be caused by a wound from without, the wound may heal without leaving any permanent damage.

LUPUS is a term used to designate a group of skin diseases of destructive and intractable character. There are two chief types of the disease, *Lupus vulgaris*, which is due to the tubercle bacillus; and *Lupus erythematosus*, a slighter condition in which reddened areas appear on the skin of the nose and cheeks.

LUPUS VULGARIS begins most commonly before the age of twenty, and, not infrequently, persists all through life, healing in one place to break out a short distance off. It causes great mutilation, both on account of the widespread destruction of the features which it attacks, and of the unsightly scars it leaves behind. The nose, cheeks, brow, and sides of the neck are most frequently attacked, though the hands and the mucous membrane inside the nose and mouth are also common seats of the malady. The first sign of the disease is a small, soft nodule of yellowish transparent appearance, on this account often called an 'apple-jelly' nodule. No pain or itching accompanies the disease, but the skin gradually becomes thickened and discoloured, other nodules appear, and finally ulcers or small abscesses form. The disease progresses very slowly, but, after it has been in existence some years, the deformity produced may be very great. The nose may be partly or wholly eaten away, even the bones being absorbed, the lower eye-lids, if attacked, become drawn down, showing the red inner surface, and the skin, which is in places red and ulcerated, in places stretched and scarred, gives to the countenance a horrible appearance. The condition is of little infective power, and, though the victims of lupus often die of consumption in the end, they may on the other hand pass through a long life without any

LYING-IN

other organ than the skin becoming affected by tuberculosis.

Treatment.—Attention to the general health is of the greatest importance. Early cases are treated by destruction of the nodules by the cautery, or by complete removal of the affected piece of skin. Recently, the methods of treatment by concentrated sunlight or concentrated light from an electric arc-lamp, have proved so successful in many cases to which they have been applied that the terrible disfigurement to which the disease used to give rise is now much less frequently seen. (See LIGHT TREATMENT.)

LYING-IN (see LABOUR).

LYMPH means properly the fluid which circulates in the lymphatic vessels of the body. It is a colourless fluid, like blood-plasma in composition, only rather more watery. It contains salts similar to those of blood-plasma, and the same proteins, and, like the blood, it forms clots, which are of yellowish colour.

LYMPHADENOMA, or **LYMPHOMA**, is another name for Hodgkin's disease.

LYSOL

LYMPHATICS is the term generally applied to the vessels which convey the lymph.

LYMPHATISM is a condition found occasionally after death in pale, weak, or rickety children, who have died suddenly from some apparently trivial cause. The most noteworthy change is great enlargement of the thymus and of the lymphatic glands throughout the interior of the body. Such children tend to die as the result of slight operations and take anæsthetics badly.

LYSOL is a brown, clear, oily fluid, of antiseptic properties, made from coal-tar. When mixed with water it forms a clear soapy fluid which is useful in 1 per cent strength for cleansing the skin, and for acting as an antiseptic and deodorant. It is used to a great extent in the same way as carbolic acid, and it does not exert upon the skin so irritating and roughening an effect as the latter.

For the treatment of lysol poisoning see the table under the heading POISONS.

MAGNESIUM.—The salts of magnesium used as drugs are the oxide of magnesium, generally known as 'magnesia', and the carbonate of magnesium, both of which have an antacid action; also the sulphate of magnesium generally known as 'Epsom salts', and the citrate of magnesium, both of which act as purgatives.

Light and heavy magnesia, as also the light and heavy carbonates of magnesia, are used to correct over-acidity of the stomach, causing sick-headache or dyspepsia. They are also used as feeble laxatives. 'Fluid Magnesia' in doses of one or two tablespoonfuls for an adult, or half to one teaspoonful for a young child, is a very useful and mild purgative.

Magnesium sulphate is by far the most commonly used saline purge. To be effective it must be given in as concentrated a form as possible. (See EPSOM SALTS.)

Citrate of magnesium and granular effervescent citrate of magnesium also form good saline purgatives.

MALARIA, also known as AGUE, PALUDISM, JUNGLE FEVER, MARSH FEVER, PERIODIC FEVER, is a disease caused by the presence of certain parasites in the blood, which are carried from one person to another by mosquitoes. It consists at first of a series of feverish attacks, which may come on every day, every second day, or every third day; later it assumes a chronic form, in which a bad state of health known as chronic malaria or malarial cachexia is developed, and there is a tendency towards frequent relapses.

Symptoms.—For a day or two before the actual fever sets in, there may be headache, vague pains about the body and limbs, chilliness, and slight rises of temperature.

The acute malarial attack has, in general, three stages, the cold stage, the hot stage, and the sweating stage.

The cold stage begins with a feeling of chilliness even in the hottest weather. This increases till the person has to betake himself to bed and heap himself with clothes, face and nails being blue with cold, and the whole body shaken with shivering. Nevertheless, if the temperature be taken with a thermometer, it is found to be considerably raised. This stage lasts an hour or less.

The hot stage comes on as the temperature of the body rises, beginning with hot flushes, which lengthen till the body feels burning hot, the temperature rising to 105° or 106° Fahr. There are also headache, dizziness, sickness, pains throughout the body, and sometimes even delirium. This stage may last several hours.

The sweating stage comes on after the fever reaches its height, as the temperature begins to fall. Profuse perspiration breaks out, the person begins to feel decidedly better, and the headache and pains at the same time pass off. Finally, after two or three hours the patient feels quite well, though much weakened, and remains so till the next attack begins.

If the parasite present be that of *quartan fever*, there is an intermission of two days before the next attack. If the parasite be that of *tertian fever*, the attacks are on the 1st, 3rd, 5th days, and so on; while in the severe *æstivo-autumnal fever*, each attack may last considerably over a day, so that there may not be time for one to pass off completely before the next begins. The patient then is in a continued state of fever, known as *subtertian fever*.

As a rule people after passing through an ague feel completely recovered till the next attack is due, but now and then the attack may develop seriously. For example, the temperature may go on rising till death occurs before the sweating

MALARIA

stage sets in. Insensibility may set in and the person die owing to blockage of the small vessels in the brain by immense numbers of the parasites. Severe vomiting or diarrhoea may also endanger the patient's life, or he may become very much collapsed during the sweating stage.

Treatment.—The successful treatment of malaria has become much more perfect within the last few years since the true nature of the disease has become fully known, although the use of quinine as a remedy has been known for nearly three centuries. The treatment falls into two important sections, preventive and curative.

PREVENTIVE TREATMENT may be directed either against the parasites or against the mosquitoes which convey them. It is generally agreed that if persons who go to a malarious district or country to reside will take regularly every day 5 or 10 grains of quinine, say in the morning, the blood may be rendered so resistant to the development of the parasites that the person is to a large extent protected against malaria, and may escape it altogether.

Wire-gauze screens to all the windows of a house, or muslin mosquito netting over the beds, form an efficient protection, and it should be remembered that not only should mosquitoes be kept away from healthy people by these means, but that it is even more important that the insects should not gain access to those suffering from the disease, by whose blood they become infected and made carriers of malaria to the healthy.

CURATIVE TREATMENT depends chiefly upon quinine, but unless the drug be carefully administered it loses much of its effect. In the early stages of the disease it has most effect if a large dose be taken an hour or thereabout before the expected attack, and in other cases three times a day. In such cases the amount taken is generally about 30 grains

MALT

each day, but this varies greatly, according to the size of the person, and his susceptibility to the drug. When taken for some time in large doses, quinine causes ringing in the ears, temporary deafness, and other unpleasant symptoms.

In chronic malaria, quinine is not of so much use as good food, removal to a temperate climate, and other measures directed towards improving the general health. Tonics containing arsenic and iron are of great benefit, and the various complications which arise are treated as in other conditions.

MALIGNANT is a term applied in several ways to serious disorders. Tumors are called malignant when they grow rapidly, tend to infiltrate surrounding healthy tissues, and to spread to distant parts of the body, leading eventually to death. (*See CANCER AND SARCOMA.*) The term is also applied to types of disease which are much more serious than the usual form, such as malignant scarlatina, malignant smallpox, etc., the disease in these cases generally resulting in death.

MALINGERING is a term applied to the feigning of illness. In the great majority of cases a person who feigns illness has a certain amount of disability, but exaggerates his illness or discomfort for some ulterior motive.

MALT is a substance derived from barley by allowing a certain amount of growth to take place in the moistened grain, which is then dried and crushed. It contains a ferment named 'diastase', together with a large amount of malt-sugar and dextrine, the latter constituents being still further developed from the starch of the barley by the action of the ferment.

For these reasons malt is mixed with various proportions of flour to form the popular foods for children.

Malt and its various extracts, being very palatable and of high nutritive value, are used in debilitating condi-

tions of different natures, combined with various other foods and tonics. The extracts are also of value in the case of persons of feeble digestive power when given along with such foods as porridge, gruel, bread and milk, or arrowroot, which they help to digest. The dose of powdered malt and of its various extracts is one or more teaspoonfuls.

MALTA FEVER, also known as **MEDITERRANEAN FEVER**, **ROCK FEVER**, **NEAPOLITAN FEVER**, and **GASTRIC REMITTENT FEVER**, is a long-continued fever which occurs on the shores and islands of the Mediterranean principally, but is found also in many tropical countries.

Symptoms.—For the first week or so, the person has headache, sickness, loss of appetite, constipation, and a feeling of tenderness over the liver and spleen, which are both enlarged. There is generally cough also, and the person perspires freely. Later, fever comes on and may resemble either that of typhoid or that of malaria in type, and it may be very difficult to distinguish a case of Malta fever, especially from typhoid. Malta fever lasts a very long time, its average duration being about three months, during which time the fever continues, the sweating is very profuse, the person gets extremely thin and weak, and rheumatic affections in the joints appear. The convalescence is equally tedious, but death very seldom occurs.

Treatment.—The disease has practically been abolished from Malta by ceasing to use goats' milk. Treatment is directed towards relieving the sleeplessness, pain in the joints, and other symptoms. The strength must also be supported by careful dieting, and, during convalescence, removal to a cool climate quickens recovery.

MAMMARY GLAND (*see* **BREAST**).

MANIA is a form of mental disorder characterised by great excitement. (*See* **INSANITY**.)

MASSAGE, or **RUBBING**, is a

method of treatment in which the operator uses his hands, or occasionally other appliances, to rub, knead, or press the skin and deeper tissues of the person under treatment. It is often combined with various 'passive' movements, in which the masseur moves the limbs in various ways, the person treated making no effort, or with 'active' movements, which are performed with the combined assistance of masseur and patient. Massage is also very frequently combined with baths and gymnastics in order to strengthen various muscles.

Uses.—Massage can only be employed to full advantage by persons having a fair knowledge of anatomy and physiology, but a small degree of instruction and practice will render any person able to treat a given case under skilled supervision. The types of case in which massage is useful are extremely various. Neuralgia, sciatica, and muscular rheumatism are among the painful conditions in which some relief is generally obtained. In neurasthenia, muscular wasting, and paralysis due to nerve conditions, the muscles affected may be kept in a state of good nutrition till the nerve weakness has disappeared, and so recovery may be materially hastened. Several types of joint disease, such as chronic rheumatism and stiffness due to previous slight injuries, such as sprains, are specially benefited by passive movements combined with deep rubbing, but any such interference with joints which have been recently the seat of tubercular disease is very dangerous, as by these means the disease may be more widely spread. In several general conditions, such as corpulence and constipation associated with a flabby state of body, massage may be of great usefulness.

Massage is often combined with electrical applications.

MASTITIS means inflammation of

MASTOID PROCESS

the breast, usually of a chronic type. (See BREAST, DISEASES OF.)

MASTOID PROCESS is the large mass of bone which projects from the side and under surface of the skull, and which can be felt immediately behind the ear. It contains numerous cavities, one of which, the 'mastoid antrum', communicates with the middle ear, and is very liable to suppurate when the middle ear is diseased. (See EAR, DISEASES OF.)

MATERNITY and CHILD WELFARE.—The high rate of infantile mortality which prevailed some twenty or thirty years ago, especially in the larger towns, drew attention to the great loss of infant life, which was produced partly by ignorance on the part of the mothers and partly by poverty. A movement was accordingly begun early in the present century in some of the larger cities to provide trained women as health visitors for giving advice to working-class women in the proper methods of rearing their children. This was at first a voluntary effort conducted by philanthropic agencies, but it was soon taken up by county councils and sanitary authorities throughout the country. Clinics, where advice on these subjects is given, have been organised by most town and county councils.

MATTER (see Pus).

MEASLES, also known as **MORBILLI** or **RUBEOLA**, is an acute infectious disease occurring mostly in children. The disease known as German measles, or *rötheln*, is slighter than measles. (See GERMAN MEASLES.)

Symptoms.—After the infection has been received into the system, there is a period of incubation lasting for from ten to fourteen days and after this the symptoms begin. These consist in the somewhat sudden onset of acute catarrh of the mucous membranes. Sneezing, accompanied with a watery discharge, sometimes bleeding from the nose, redness and

MEASLES

watering of the eyes, cough of a short and noisy character, with little or no expectoration, hoarseness of the voice, and occasionally sickness and diarrhoea, are the chief local symptoms of this stage. But along with these there is well-marked feverishness, the temperature being elevated (102° - 104° Fahr.) and the pulse rapid, while headache, thirst, and restlessness are usually present. In some instances, however, these early symptoms are so slight that they almost escape notice, and the child is allowed to associate with others at a time when the contagion of the disease is most active. This stage lasts as a rule for three or four days, the fever, however, showing a tendency to pass away temporarily on the second and sometimes also on the third day. About the fourth day the characteristic eruption appears on the skin, being first noticed on the brow, cheeks, chin, also behind the ears, and on the neck. It consists of small spots of a dusky red or crimson colour, slightly elevated above the surface, tending to become grouped together into patches of irregular, occasionally crescentic, outline, with portions of skin free from the eruption intervening. The face acquires a swollen and bloated appearance, which, taken along with the catarrh of the nostrils and eyes, is most characteristic, and renders the diagnosis at this stage a matter of no difficulty. The eruption spreads downwards over the body and limbs, which are soon thickly studded with the red spots or patches. The rash continues to come out for two or three days, and then begins to fade in the order in which it first showed itself, namely, from above downwards. By the end of about a week after its first appearance, scarcely any trace of the eruption remains beyond a faint staining of the skin. Along with the rash, the fever, catarrh, and other constitutional disturbance, which were present from the begin-

ning, become aggravated, the temperature often rising to 105° or more. The patient is also usually much depressed. These symptoms usually decline as soon as the rash has fully appeared. In favourable cases, convalescence proceeds rapidly, the patient feeling perfectly well even before the rash has faded from the skin.

Measles as a disease derives its chief importance from the risk of certain complications which are apt to arise during its course, more especially inflammatory affections of the respiratory organs. These are most liable to occur in the colder seasons of the year and in very young and delicate children. Thus bronchitis or pneumonia, generally of the diffuse or lobular variety (*see* PNEUMONIA), sometimes forms a serious complication. Or there may remain as direct results of the disease, chronic inflammation of the eyes, or discharge from the ears with deafness.

Apart, however, from those immediate risks, it should be borne in mind that in measles there appears to be a tendency in many cases for the disease to leave behind a weakened condition of the general health, which may render children, previously robust, delicate and liable to chest complaints and enlargement of glands.

Treatment.—In families with little house accommodation isolation is frequently ineffectual, but it ought to be tried, at all events in the case of children under the age of five years. Those *unaffected children, who have not previously had measles*, should, on the occurrence of a case in a school class, be excluded from school from the 9th to the 14th day thereafter. If they have been infected, they will show the signs of the disease in this time. In extensive epidemics, it is sometimes desirable to close the schools of a locality for a time.

As regards treatment, in an ordinary case of measles, confinement to

bed in a somewhat darkened room, into which, however, air is freely admitted in such a way as to avoid draughts; light, nourishing diet (soups, milk, puddings, etc.), and mild diaphoretics, such as Mindererus spirit and ipecacuanha (*see* DIAPHORETICS), are all that is necessary. A hot bath, to which one or two tablespoonfuls of mustard are added, may, with advantage, be administered, if the eruption be feebly developed, and especially if convulsions should set in. The serious chest complications of measles are to be dealt with by those measures applicable for the relief of pneumonia or bronchitis. (*See* BRONCHITIS and PNEUMONIA.) Inflammation of the eyes is best soothed by washing several times daily with weak boric acid lotion, and thereafter smearing a little boric ointment on the edge of each lower lid. Ear complications, if they come on, usually appear with a discharge as the child is getting better. (*See* EAR, DISEASES OF.)

MEAT is the chief of the animal foods which contain a large proportion of protein (albuminous material), necessary for body building. The term includes beef, mutton, and other forms of flesh. Forms of meat which are easier to digest are found in poultry, game and rabbit, as well as in the internal organs such as tripe, sweetbread, liver, etc. Similar materials in a still more easily digestible form are found in fish, eggs, jellies, and milk. Among the vegetables, pulses like peas, beans, and lentils have a composition similar to meat, because they contain much protein material, but they are difficult to digest.

Meat in some form is necessary for children and young growing persons to the amount of about 4 ounces daily, as well as for people doing hard manual labour, but very little is required by the aged.

Fish is cheaper and more easily digested than beef, but as fresh fish

MEATUS

contains more water and less fat than beef, it has in general only about one-third of the nutritive value of the latter. Dried or cured fish is, however, one of the cheapest and most nutritious forms of animal food, and two herrings contain as much building material as need enter into the daily diet of an ordinary working man.

Soup, in addition to vegetables, contains gelatine, fat, and chemical substances known as extractives, which have a stimulating effect on digestion and bodily activity, and soup is therefore a valuable article of diet.

For eggs and milk, see these headings. See also **CANNED FOOD** and **DIET**.

MEATUS is a term applied to any passage or opening, *e.g.* external auditory meatus, the passage from the surface to the drum of the ear.

MEDITERRANEAN FEVER (*see* **MALTA FEVER**).

MEGRIM (*see* **HEADACHE**).

MELÆNA means a condition of the stools in which dark, tarry masses are passed from the bowel. It is due to bleeding from the stomach or from the higher part of the bowel, the blood undergoing chemical changes under the action of the secretions.

MELANCHOLIA is a form of insanity characterised by great mental and physical depression. (*See* **INSANITY**.)

MENINGITIS is a term applied to inflammation affecting the membranes of the brain (cerebral meningitis), or spinal cord (spinal meningitis), or both.

SIMPLE MENINGITIS may arise from a variety of causes. Among the more common are injuries of the head, extension of disease from contiguous parts, such as erysipelas of the scalp or inflammation in the bones of the ear.

TUBERCULAR MENINGITIS is an inflammation of the membranes caused by the tubercle bacillus. The

MENINGITIS

disease is most common in children under the age of ten years, but is by no means confined to that period of life, and may affect adults. In numerous cases, it is connected with insufficient or improper feeding, or is a consequence of some disease of childhood, particularly measles or whooping-cough. When it occurs in adults it is usually secondary to chronic tuberculosis in another part of the body, especially in the lungs.

Symptoms.—A falling off in flesh and failure of strength are often observed for a considerable time before the characteristic symptoms of the disease appear.

The onset is in most instances marked by the occurrence of vomiting, and there is, in general, obstinate constipation. In some cases, the first symptoms are convulsions, which, however, may subside, and reappear at a later period. Headache is one of the most constant of the earlier symptoms, and is generally intense, at times causing the patient to scream, with a peculiar and characteristic cry. There is great intolerance of light and sound, and general nervous sensitiveness. The neck shows rigidity so that the head cannot be so readily bent forwards as usual, and similar rigidity in the lower limbs is almost invariably found. Fever is present to a greater or less extent, the temperature ranging from 100° to 103° Fahr.

Later the patient becomes quieter and inclines to sleep, but it will be found on careful watching that this quietness is a condition of apathy or partial stupor into which the child has sunk. The eyes present important alterations, the pupils being dilated or unequal, and scarcely responding to light. There may be double vision, or partial or complete blindness. Squinting is common in this stage, and there may also be drooping of an eyelid, due to paralysis of the part, and one or more limbs may be likewise paralysed.

MENINGITIS

Still later the temperature rises sometimes to a very high degree. The pulse becomes feeble, rapid, and exceedingly irregular, and deep unconsciousness comes on. In this condition, the sufferer's strength undergoes rapid decline, and the body becomes markedly emaciated. Death takes place suddenly in a fit, or, more generally, from exhaustion.

The duration of a case of tubercular meningitis varies, but, in general, death takes place within three weeks from the onset of the symptoms. The disease is almost invariably fatal, yet cases presenting all the chief symptoms of tubercular meningitis do occasionally recover.

Treatment.—It is most important in families where the history indicates a tubercular tendency, and particularly where meningitis has already occurred, that every effort should be made to avoid the causes of the disease during early childhood. With this view, wholesome food, warm clothing, cleanliness, regularity, and the avoidance of over-exertion, physical and mental, are of the utmost consequence, and care should be taken to avoid tuberculous milk. (See MILK.)

EPIDEMIC CEREBRO-SPINAL MENINGITIS, also known as CEREBRO-SPINAL FEVER, SPOTTED FEVER, MALIGNANT PURPURIC FEVER, and POST-BASIC MENINGITIS, is a dangerous epidemic condition characterised by painful contractions of the muscles of the neck, retraction of the head, and mental symptoms. It is very fatal, or, in the event of recovery, is apt to be followed by loss of some of the senses, such as sight or hearing, and by mental impairment.

Symptoms.—The onset is usually sudden, sometimes startlingly so. As a rule, vomiting, headache, and fever first appear, followed in a few hours by stiffness of the neck and of the lower limbs. In children, convulsions are common. After the

MENORRHAGIA

first week, if life is prolonged, the disease usually abates gradually and in the course of some weeks the rigidity may have disappeared and the temperature may have become normal. On the other hand, the disease may pass into a chronic state with great wasting, and, if the patient be a young child, the body is greatly bent backwards. Very often the child falls a victim to some complication, such as broncho-pneumonia.

The mortality of this disease varies in different epidemics, in some being as high as 80 per cent of the cases affected, in others only about 20 per cent.

Treatment.—The risk of infection is very slight except among persons living in barracks and under similar crowded conditions. In such cases isolation is very necessary. The diet should be light and nutritious. For insomnia, soporifics may be necessary, and for pains in the back and limbs the hot bath is very effective. The severe headache which is an almost constant symptom is relieved at once, though it may be only temporarily, by the operation of lumbar puncture, which is also of great importance in regard to diagnosis. The injection into the spinal canal of a special serum is often followed by benefit.

It is important for the prevention of the spread of infection that all persons coming into contact with cerebro-spinal meningitis should be in the open air as much as possible and should disinfect the nose and throat by the regular use of antiseptic sprays and gargles. (See GARGLES.)

MENOPAUSE is the term applied to the cessation of menstruation at the end of reproductive life. Usually it occurs between the ages of 45 and 50, though in numerous cases it occurs before 45 or after 50. It rarely occurs before 40 unless as the result of disease.

MENORRHAGIA means an over-

MENSTRUATION

abundance of the menstrual discharge.

MENSTRUATION is a periodic change, which consists chiefly in a flow of blood from the cavity of the womb, and is associated with various slight constitutional disturbances. It begins between the ages of thirteen and fifteen, as a rule, though its onset may be delayed till as late as twenty. It is said to appear earlier in warm countries and among certain races, for example, the Jews. Along with its first appearance, the body develops greatly, while the mental change is even more striking. The duration of each menstrual period is very regular, varying in different persons from two to eight days. It recurs in the great majority of cases with extreme regularity, most commonly at intervals of twenty-eight days or thirty days, less frequently with intervals of twenty-one or twenty-seven days, ceasing only during pregnancy and lactation, till the age of forty-four or fifty arrives, when it stops altogether, as a rule ceasing early if it has begun early. The final stoppage is known as the menopause or the grand climacteric.

Disorders of menstruation.—In the majority of healthy women, menstruation proceeds regularly for thirty years or more, with the exceptions connected with childbirth. In many persons, as the result either of general or local conditions, the process may be absent, or excessive, or may be attended with great discomfort or pain. The term *amenorrhœa* is applied to cases in which menstruation is absent, *menorrhagia* and *metrorrhagia* to cases in which it is excessive, the former if the excess occurs at the regular periods, the latter if it is irregular, while *dysmenorrhœa* is the name given to cases in which the process is attended by pain.

AMENORRHŒA may be due to general or to local causes. Among the former, *anæmia*, with the various conditions that lead to it, ranks

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perhaps first in importance in young women. Bad feeding, over-hard work, want of fresh air, and all causes which depress the system and cause loss of flesh tend to cause diminution and finally stoppage of the menses. In a similar manner, serious diseases, such as Bright's disease, consumption, malaria, aggravated dyspepsia, which weaken the constitution, lead to this result. In all these cases, stoppage of the menstrual loss of blood is beneficial, because it prevents a needless extra drain upon the system. Various influences which act through the nervous system, such as a sudden fright, great grief, and exposure to cold like that of an unaccustomed bath just before a period is due, may also cause stoppage for several months. Among the local causes of *amenorrhœa*, pregnancy, of course, stands first. Failure of menstruation to appear at all in a young woman may be due to slow or imperfect development of the ovaries or womb.

The treatment in all cases consists in removal of the cause and attention to the general health, and remedies for the condition of bloodlessness if present. (*See ANÆMIA.*)

MENORRHAGIA.—Excessive menstruation may to a certain extent be due to the same general causes which produce *amenorrhœa*, the same diseases, such as Bright's disease or consumption, causing stoppage or excess in different persons, according to their personal peculiarities. Thus, in some persons, an excessive discharge is brought about by these conditions, and the bad effects of the general disease are much increased by the added drain upon the system, due to loss of blood. In heart disease, the womb may share in the general internal congestion, and the menses in consequence are increased. In some persons, menstruation at its first appearance is excessive, and even dangerous amounts of blood are lost; while it is so frequently the case as

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to be almost the general rule that, at the time when the menstrual periods are about to stop, they become irregular in time and often excessive in amount. But it is most often a local condition that produces menorrhagia, and in this case, as a rule, not only is the periodic loss increased but there is bleeding at irregular times (metrorrhagia). Polypus, fibroid, and other tumors, displacements of the womb, and particularly some inflammation consequent upon childbirth or miscarriage, are the most common causes of this type.

In the treatment, rest and various internal remedies which check hæmorrhage, together with careful attention to the general health between the periods, are essential. As a rule, also, some local operative measures intended to check the bleeding or to remove its cause are necessary. (*See UTERUS, DISEASES OF.*)

DYSMENORRHOEA is of various types, and may vary from merely severe discomfort to the most agonising colic, accompanied by prostration and vomiting. Anæmia is sometimes a cause of painful menstruation as well as of stoppage of this function. Gout and rheumatism are also fairly frequent causes, and it is well that remedies for these should be tried in dysmenorrhœa which appears without obvious reason, before recourse is had to more serious measures. Chills and exhaustion may produce pain for a single period in persons usually natural. Occasionally pain, especially when it precedes the menstrual period, is due to irritation in the ovary; and in this case it is generally accompanied by pain in one groin, and often by hysterical manifestations. For this type of pain, careful regulation of the bowels, regular exercise, and the application of counter-irritation to the lower part of the abdomen form the course of treatment generally carried out. In some cases the administration of

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ovarian or other glandular extract is attended with benefit.

Many cases of dysmenorrhœa appear with the beginning of menstrual life, and accompany every period. Some of these are of an obstructive type, due to spasm of the neck of the womb, in consequence of which a severe uterine colic is set up. In many cases, the spasm appears to be one manifestation of a nervous temperament. In other cases the pain appears to be due to difficulty in the separation of the surface layer of mucous membrane, which comes away in healthy menstruation in fragments with the blood. In these cases, the lining of the uterus, after great difficulty, is finally expelled in the form of a complete membranous cast of the interior, and the pain then abates. In other cases, the spasm may be due in part to defective development of the womb, producing either great narrowness of its mouth or causing it to be bent upon itself, and occasionally these cases are benefited or cured by an operation designed to stretch the neck of the womb, or otherwise relieve the defect. For the temporary relief of dysmenorrhœa, rest in bed, or, at all events, lying down, hot compresses to the lower part of the abdomen, and antipyrine or phenacetin internally, are the remedies which prove most useful.

MENTAL DEFECTIVENESS. —

Mental defect, as opposed to insanity, is a primary condition, in which certain persons never develop to the average standard of intelligence, while insanity means an occurrence of mental disease appearing in persons previously healthy. The question of mental defect has in recent years attracted a great deal of attention, because it is realised that much incapacity for work, with suffering and hardship, both as regards mental defectives and their relatives, as well as a large amount of crime, is due to failure to recognise this condition at

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an early stage of life. If recognised in childhood as mentally defective, these persons may often be educated in special schools for simple employments and kept under observation and training with regard to moral and social qualities.

Mental defect is of several types and of all grades from complete idiocy up to that of the high-grade mental defective, who is merely unable to understand and transact complicated business.

The symptoms by which the presence of mental defect is recognised in infants and young children are bodily as well as mental.

The occurrence in infants of convulsions is often associated with mental defect either as a cause of or produced by brain defect. Abnormal gestures and actions, such as constant crying, rolling of the eyes, or simply want of animation when the nurse or mother fondles a child and, at a later stage, unmeaning laughter and grimaces, dirty habits, disgusting ways of eating, or dribbling of saliva from the mouth, are all signs of defective mentality.

Other significant signs are found in slowness of development as compared with other children. Thus the infant may be too long in learning to hold up its head, to use its hands for grasping objects, to stand, and to notice bright or attractive objects placed before it. Difficulty in learning to suck, backwardness in speaking, and delay in learning cleanly habits are all significant.

At a later age, in order to find out the degree of mental defect in a child or adult, a simple form of examination is set, questions being asked which have been found capable of being answered by a normal child at a given age.

Treatment.—In the great majority of cases, mental defect is incurable and children who are mentally weak will remain so throughout life. Nevertheless, most mentally defect-

MENTHOL

ive children, unless the defect is very great, are capable of improvement under suitable treatment and may actually be able in later life to earn a satisfactory living at some simple regular employment and even to work better than a more intelligent person. Attention to the general health is of great importance, and when special conditions such as cretinism, syphilis, deafness, etc., are found, these should receive appropriate treatment. Young children who are found to possess insufficient concentration for book work should be instructed in amusing kindergarten occupations, and bad and dirty habits should be gradually corrected. The child should be encouraged to do as much as he can for himself, and particular care should be exercised to promote self-control and to cultivate moral character.

The attempt should be made to prepare the mentally defective person for taking up, about the age of sixteen, some simple form of productive work, if he is at all capable of such training. If he proves incapable of this, it is better for society that he should be maintained in some institution for the remainder of his life.

MENTAL DISEASES (*see* INSANITY).

MENTHOL is a white crystalline substance deposited from oil of peppermint when it is cooled.

In neuralgia, cones and sticks of menthol are widely used to rub over the affected part. In many itchy conditions of the skin a strong solution of menthol in olive oil (1 part in 10) relieves the sense of irritation at once. Menthol plaster is useful in gout, rheumatism, and neuralgia, and so are mixtures with chloral or camphor painted over the painful parts. For inflamed conditions of the nose and throat, menthol diluted with parolene is sprayed on the part affected, or in the case of the throat various lozenges and pastilles containing menthol are sucked. In

MERCURY

bronchitis, both in early stages and when there is much secretion, menthol crystals thrown upon hot water, from which the vapour is inhaled, give much relief.

MERCURY, also known as QUICK-SILVER or HYDRARGYRUM, is a heavy fluid metal. In medicine the metal is used in a state of fine subdivision in the form of an ointment, a plaster, grey powder, and blue pill.

The salts of mercury fall into two groups: the mercuric salts, which are very soluble and powerful in action; and the mercurous salts, which are less soluble and act more slowly and mildly. The mercuric salts are all highly poisonous both to man and to bacterial life, so that they are strongly antiseptic.

MICROBE, or MICRO-ORGANISM, is a general name applied to bacteria and other minute forms of animal and vegetable life.

MIDWIFERY (see LABOUR).

MIGRAINE is the name of a special type of headache. (See HEADACHE.)

MILK is practically the only form of animal food in which protein, fat, carbohydrate, and salt are all represented in sufficient amount, and it therefore contains all the constituents of a standard diet. The milk of different animals varies considerably in the proportions of the different solids present, and cows' milk differs from human milk, particularly in the facts that in cows' milk the material from which curd is formed is present in much too large a proportion, while milk sugar is deficient. On the other hand, human milk contains a much larger proportion of albumin.

The percentage of cream by volume should be not less than 10 per cent. The amount of cream contained in milk can readily be discovered by allowing the milk to stand overnight in a cylindrical graduated vessel, when the cream rises to the top, and its volume can be measured off.

Pure milk suitable for children is sold under an order of the Ministry of

MILK-FEVER

Health which came into force in 1923, and is milk derived under clean conditions from cows which are specially inspected and tested periodically by tuberculin in order to ensure that they are free from tuberculosis. Pasteurised milk may be sold having a similar freedom from the risk of tuberculosis. The grades of milk which are now officially recognised are as follows:

1. *Certified Milk*.—This comes from herds in which every animal must pass a tuberculin test at intervals of six months. The cows must be kept and milked under special conditions of cleanliness, and the milk must be immediately cooled and placed in bottles closed by a cap forming a seal and bearing the address of the farm, the day on which the milk was produced, and the words 'certified milk'.

2. *Grade A (Tuberculin-tested) Milk*.—This is the same milk as certified milk but it is not bottled at the farm, being delivered in bulk to dairies, so that the consumer has not quite the same guarantee of its purity.

3. *Grade A Milk*.—This is obtained from a herd examined every three months by a veterinary surgeon but not necessarily tuberculin tested, and the milk is not delivered sealed to the consumer.

4. *Pasteurised Milk*.—This milk must be treated at a temperature between 145° and 150° F. for thirty minutes and immediately thereafter cooled.

Milk is much used as a food for invalids, especially in conditions of fever, such as pneumonia and enteric fever. It is also much used in acute Bright's disease. When the patient receives nothing but milk, about 3 pints are necessary daily. The milk is then usually administered every two hours during the day, 6 ounces or a large teacupful being given at a time. A tablespoonful of lime-water is often added to the cupful of milk to increase its digestibility.

MILK-FEVER is a term applied to a slight feverish attack which may

appear about the third day after childbirth, in consequence of tenderness in the breasts, constipation, or other trivial cause, and which quickly passes off again.

MILK TEETH are the temporary teeth of children. For the time of their appearance, see **TEETH**.

MINDERERUS SPIRIT is an old name for *liquor ammonii acetatis*, a solution of ammonium acetate, which acts as a diuretic, and is much used in domestic medicine for colds and slight feverish conditions. It is a harmless substance, and acts as an antacid and diuretic, and helps to reduce feverishness. The usual dose of Mindererus spirit is a dessert-spoonful or more for an adult, or a teaspoonful for a child.

MISCARRIAGE, or **ABORTION**, means the premature separation and expulsion of the contents of the pregnant uterus. When occurring before the eighth month, *abortion* is the term ordinarily employed, but subsequent to this period it is designated *premature labour*. The present notice includes both these terms. As an accident of pregnancy, abortion is far from uncommon, although its relative frequency, as compared with that of confinement at full time, has been very differently estimated. It is more liable to occur in the earlier than in the later months of pregnancy, and it would also appear to occur more readily at the periods corresponding to those of the menstrual discharge.

Causes.—Abortion may be induced by numerous causes, both of a local and general nature. Malformations of the pelvis, accidental injuries, and the diseases and displacements to which the uterus is liable, on the one hand, and, on the other, various diseased conditions leading to the death of the fœtus, are among the direct local causes of abortion. The general causes include states of the system which are apt to exercise a more or less direct influence upon the progress of pregnancy. A deteriorated condition of health certainly predis-

poses to the occurrence of abortion. Many diseases arising in the course of pregnancy act as direct exciting causes of abortion, more particularly fevers and acute inflammatory affections. Further, certain medicinal substances are commonly believed to be capable of exciting uterine action, but the effects, as regards at least early pregnancy, are very uncertain, while the strong purgative medicines sometimes employed with the view of procuring abortion have no effect whatever upon the uterus, and can only act indirectly, if they act at all, by irritating the bowels. Many cases of abortion occur without apparent cause, but in such instances the probability is that some diseased condition of the interior of the uterus exists, and the same may be said of many of those cases where abortion occurs time after time. In such cases syphilitic disease is a very common cause. Abortion resembles ordinary labour, excepting that in the former, hæmorrhage, often to a large extent, forms one of the leading symptoms.

After miscarriage has occurred, the patient should observe the same care regarding rest, diet, etc., as after a full-time labour. If this care be not exercised, subsequent ill health and future miscarriages are very liable to ensue.

MIXTURE is the name given to any compound of drugs in the form of a liquid, intended for internal use. In general, mixtures are dispensed in bottles of 2, 4, 6, or 8-ounce size, and the dose, as a rule, is one tea-, dessert-, or tablespoonful at a time.

MORPHIA, or **MORPHINE**, is the name of the chief alkaloid upon which the action of opium depends. (See **OPIUM**.)

MOUTH, DISEASES OF.—The mouth being one of the few internal cavities which can be examined by direct vision, its examination affords valuable, even if somewhat uncertain, evidence in cases of disease.

Conditions of the tongue.—*Fur on*

the tongue consists of a thickening of the superficial layers of the mucous membrane. It should be remembered that milk whitens the tongue and makes it look as if 'furred'. Fevers of all sorts are associated with a furred tongue, and in typhoid fever, most of all, the fur accumulates till the tongue is covered with a thick mass, brown in the centre and yellow towards the edges. In scarlet fever there is often seen what is called a 'strawberry tongue', the general surface being covered with a white fur, through which project the red and inflamed points of the larger papillæ with which the tongue is studded. Constipation and obstruction of the bowels are associated, as a rule, with a thick, white or brownish, fissured fur upon the tongue, and in cases of indigestion the presence of such a fur is often made the occasion for administering a laxative. Gastritis, particularly when due to excess in alcohol, is prone to cause a thin white fur; and the tremulous tongue coated in the mornings with fur, which wears off as the day advances, is one of the surest signs of habitual drinking. All inflammatory affections of the throat, such as tonsillitis, are apt to be accompanied by a thick, moist fur upon the tongue, very much resembling a layer of thick cream. In rheumatic fever a uniform yellowish fur often gives an appearance known as 'blanket tongue'.

Feeble children and persons brought very low by illness frequently develop small raised *white patches*, called 'thrush', upon the mucous membrane of the mouth and tongue. These are caused by the growth in its surface layer of a parasitic mould.

A chronic condition, in which the tongue becomes studded with thickened, smooth, white patches, often separated by *deep fissures*, is known as 'leucoplakia'.

INFLAMMATIONS OF THE MOUTH arise from the same causes as inflammation elsewhere, but among the special causes may be noted a

jagged or painful tooth, an ill-fitting plate, the cutting of teeth in children, alcohol, tobacco-smoking, digestive disturbance, and, in the special form of inflammation known as thrush (above mentioned), a parasitic mould. General ill-health plays a very important part in the case both of children and of adults. Whatever be the cause, the mucous membrane becomes red, swollen, and tender, while small ulcers may in some cases develop here and there. Generally, the avoidance of highly spiced food, of alcohol, and of tobacco is sufficient to cure the condition, which may be soothed, while it lasts, by smearing on glycerin of boric acid, or honey of borax.

ULCERS OF THE MOUTH are usually of small size, and arise from a variety of causes. It is not at all uncommon in feeble, badly fed children for one or two ulcers to develop on the inside of the cheeks, on the gums, or on the tongue, causing pain in eating, profuse discharge of saliva, and unpleasant smell of the breath. Single small ulcers arise in otherwise healthy people from the irritation of a jagged tooth, a small wound, or even as the result of dyspepsia. These may be very troublesome, and being generally situated in the groove between lip and gum, or on the tip and edge of the tongue, they are prevented from healing by the movement of the parts, and may become very troublesome for weeks or even months. The digestion must receive careful attention, the mouth must be kept clean by antiseptic washes and regular brushing of the teeth, and the little ulcer may be touched with a strong astringent such as tincture of iodine or nitrate of silver every few days, and, in the interval, protected by occasional application of borax-honey or glycerin of boric acid.

BAD TEETH form one of the commonest sources of complaint regarding the mouth. (See **TEETH, DISEASES OF.**)

MOVABLE KIDNEY

GUMBOIL is a very common minor disease. (See GUMBOIL.)

RANULA is a clear, cyst-like swelling, appearing beneath the tongue in connection with the salivary glands in this region. It is a cyst full of saliva, and is treated by simple surgical procedures.

MUMPS is an acute infective inflammation of the salivary glands. (See MUMPS.)

TUMORS occur on the lips, on the jaw and most commonly on the tongue.

MOVABLE KIDNEY (see KIDNEY, DISEASES OF).

MUCILAGE is prepared from acacia or tragacanth gum, and is used as an ingredient of mixtures containing solid particles in order to keep the latter from settling, also as a soothing substance.

MUCUS is the general name for the slimy secretion derived from mucous membranes, such as those lining the nose, air passages, stomach, large intestine, etc.

Under normal conditions the surface of a mucous membrane is lubricated by only a small quantity of mucus, and the appearance of large quantities of mucus upon its surface is a sign of inflammation.

MUMPS, also known as PAROTITIS, and popularly as 'THE BRANKS', is an infectious disease characterised by inflammatory swelling of the salivary glands, frequently occurring as an epidemic, and affecting mostly young persons.

Symptoms.—There is a long incubation period of two to three weeks, after infection, before the glands begin to swell. The first signs are fatigue, slight feverishness, and sore throat, which may precede the swelling by a day or two. The gland first affected is generally the parotid, situated in front of and below the ear, and along with the swelling there is often some faceache and considerable rise of temperature (to 101° or even 104° Fahr.). The swelling usu-

MUSCLE

ally spreads to the submaxillary and sublingual glands lying beneath the jaw, and to the glands on the side opposite that first affected. There is hardly ever any redness or tendency to suppuration in the swollen parts, though interference with the acts of chewing and swallowing may occasion a good deal of trouble; and the swelling is tender to touch. After continuing four or five days the swelling abates, the temperature having generally already fallen. During the period of convalescence there occasionally occurs some tenderness and swelling of the testicles in the male, or of the ovaries and breasts in the female.

Treatment.—During the two or three days that the fever lasts, the patient should remain in bed, and he should be confined to one room, or at all events should avoid other children for about three weeks, in order to prevent the spread of infection. Soft food, mild aperients, and the protection of the inflamed parts by a strip of flannel or by cotton-wool and a handkerchief are all the treatment usually required. If there be much faceache, it is relieved by warm fomentations. After the attack subsides, tonics are called for.

It is important that, if a child has been exposed to the infection of mumps, he should be kept from school, and from mixing with healthy children, till three or preferably four weeks have elapsed. (See INFECTION.)

MUSCLE, popularly known as FLESH, is the tissue by which, in virtue of its power of contraction, movements are made in the higher animals. Muscular tissue is divided, according to its function, into two great groups, *voluntary muscle* and *involuntary muscle*, of which the former is under control of the will, while the latter discharges its functions independently. The term 'striated' muscle is often given to voluntary muscle, because under the microscope all the voluntary muscles

show a striped appearance, while involuntary muscle is, in the main, 'unstriped' or 'plain'.

MUSCLES, DISEASES OF.—The muscles are singularly free from liability to diseases which commonly affect other tissues, this being the result, probably, of their activity, good blood supply, and the changes constantly taking place in them. Wasting of muscles sometimes occurs as a symptom of disease in other organs—for example, damage to the nervous system, as in infantile paralysis or in the disease known as progressive muscular atrophy. (*See PARALYSIS.*)

INFLAMMATION (myositis) of various types may occur. As the result of injury, an abscess may develop (*see ABSCESS*), though wounds affecting muscle generally heal well. Tubercular inflammation in muscles is almost unknown. Syphilis is the disease which, more than any other, affects the muscular system, a growth due to this disease, known as a 'gumma', sometimes forming a hard, almost painless swelling in a muscle. Rheumatism is another type of chronic inflammation (*see RHEUMATISM*) to which muscles are very liable.

RUPTURE of a muscle may occur, without any external wound, as the result of a spasmodic effort. It may tear the muscle right across, or part of the muscle may be driven through its fibrous envelope, forming a 'hernia' of the muscle. The severe pain experienced in many cases of lumbago is due to tearing of one of the muscles in the back. These conditions give rise to considerable pain, but are relieved by rest and massage.

PAIN, quite apart from any inflammation or injury, may be experienced on exertion. This type of pain, known as 'myalgia', occurs especially in weakly persons, and is then relieved by rest and tonic treatment. It is also one of the common forms of rheumatism. In young

children pains of an aching character are often experienced in the muscles, especially of the legs and back, and are known as 'growing pains'. These come on specially after exertion and are relieved by resting.

CRAMP is a well-known condition due to spasm. (*See CRAMP.*)

TUMORS are occasionally met with in the form of fatty and sarcomatous growths.

MYOPATHY is a term applied to a developmental defect in certain muscles.

MUSK is the name given to a dried secretion obtained from genital glands of the musk deer. It is used particularly in hysterical conditions.

MUSTARD is a yellowish powder, with irritating properties.

Externally, mustard is used, made into a paste with water and spread upon brown or cartridge paper, or made up with linseed into a poultice, for its irritant action upon the skin, in cases of rheumatism, inflamed joints, neuralgia, and for application to the chest and abdomen when organs in these cavities are inflamed. These applications should not, as a rule, last longer than twenty minutes. In a hot or cold bath one or two tablespoonfuls of mustard have an invigorating effect. The effect of mustard, if too pronounced, may be relieved by applying olive oil.

Internally, mustard is used in small quantities as a stimulant to digestion, and in large quantities as an emetic, a tablespoonful of mustard powder being stirred up in a tumblerful of cold water for the latter purpose.

MYALGIA means pain in a muscle. (*See LUMBAGO and RHEUMATISM.*)

MYELITIS is inflammation in the spinal cord. In the *acute* variety the nerve elements in the affected part become softened, in the *chronic* form the change is slower, and the diseased area tends to become denser (sclerosed), the nerve-substance being replaced by connective tissue. In

MYOPIA

the variety known as *polio-myelitis* nerve-cells in the grey matter of the cord become destroyed, and the condition known as 'infantile paralysis' is produced. (See PARALYSIS.)

MYOPIA means short-sight. (See SPECTACLES.)

MYOTONIA is a rare condition in which the muscles, though possessed of normal power, contract only very slowly. The stiffness disappears as the muscles are used.

MYRRH is a gum-resin obtained from an Arabian myrtle tree. It stimulates the functions of mucous membranes with which it is brought in contact or by which it is excreted. Tincture of myrrh is used for a gargle in sore throat, as a tooth-wash when the gums are inflamed, and as an ingredient of cough mixtures.

MYXŒDEMA is a disease showing a swollen and degenerative condition of the subcutaneous and connective tissues throughout the body, due to a defect in the thyroid gland.

Symptoms.—A person suffering from myxœdema to a marked degree presents a most characteristic appearance. The face is swollen, the features coarse, and the expression dull and unrelieved by any passing emotions or interests. The skin generally is dry and yellow, but the cheeks are usually bright red in contrast. The hair is thin, harsh, and brittle, and the person may even be completely bald. The intellectual functions also are slow, the speech is deliberate, the formation of ideas, as

MYXŒDEMA

for example in answer to questions, and indeed all the ordinary affairs of life, take far longer than in the case of healthy persons. Later, memory becomes bad, and the person grows deaf and very drowsy. Though at first the temper is placid, in the later stages irritability and delusions appear.

Along with these more obvious changes there is general swelling all over the body, and the person, partly in consequence of the slowness of his movements, partly as the result of weakness, becomes very ungainly. The cold is often complained of by the invalid, who has difficulty in keeping himself warm, and, if the temperature be taken, it is usually found to be subnormal (96°-98° Fahr.).

Cases last for many years even when untreated, and the disease is seldom directly fatal. When the case is treated, improvement almost always takes place with great rapidity, and treatment is effective even after the person has been ill for many years.

Treatment.—The necessary and sufficient treatment consists in the administration of the thyroid gland of some animal. Sheep's thyroid is to be obtained in a dried condition, or in tablets. When the last traces of the disease have vanished, a small dose once or twice a week will suffice in most cases to maintain the health, but if the remedy be discontinued for any great length of time, symptoms of myxœdema again assert themselves.

NÆVUS is the term applied to birth-marks consisting of a mass of dilated blood-vessels. These structures may take the form of the large 'port-wine stain' often seen upon the face, for which little can be done, or they may occur as swellings of a more restricted nature, usually of a red or bluish colour. Many nævi tend to decrease in size as the child advances in years; or if not, the blemish can often be removed by cutting out the piece of skin that is involved, or by electrolysis.

NAILS, DISEASES OF.—The nails are subject to very few diseases, though any interference with the natural appearance of the finger-nails is very unsightly, while the sensitive matrix of both finger- and toe-nails is extremely tender when diseased.

INFLAMMATION of the nails and of the bed in which they rest occurs frequently in various skin diseases, *e.g.* in psoriasis, eczema, and syphilis. The nails then become rough, thickened, irregular, discoloured, and split readily into layers. Most acute fevers are accompanied by irregularities in growth of the nails producing a transverse furrow in the nail, as it grows onwards, and these furrows serve to date a severe illness fairly accurately, the furrow gradually approaching the free margin of the nail and disappearing in about six months' time.

The treatment for inflammation of the nails must be of a general nature, the disease not being limited to these structures.

ABSCESS may occur at the root of the nail (*see* WHITLOW) or underneath it near its edge. As a rule, these abscesses are caused by a minute poisoned wound, such as that due to a splinter of wood. The condition is generally very painful, but is relieved by opening, so as to allow free exit for the pus, the nail being

snipped up with a pair of scissors if necessary. The nail in these cases is often cast off.

INJURY to the nail by a blow is frequently followed by an effusion of blood beneath it, the nail first turning black, and then often being shed. In all these cases where the nail is shed, a new nail generally appears quickly, and replaces the old one in six months, unless the matrix has been very seriously diseased or injured. While the new nail is growing, the point of the finger merely requires the protection of a finger-stall.

INGROWING NAIL is a troublesome condition affecting only the nails of the toes. It is due to a variety of causes, chief among which are the pressure of badly fitting boots, cutting away of the corners in paring the nails, and want of attention to the nails, whereby accumulations of scarf-skin and dirt collect beneath the nail, and by putrefactive changes cause ulceration of the skin at the sides. The condition also occurs in old, bedridden people, mainly for the last-named reason. The treatment is simple, though sometimes tedious. It consists in the wearing of well-made boots, cutting of the nails square across without paring away the corners, and the packing two or three times daily of a shred of boric lint between the corner of the nail and the skin which it is chafing. These measures are generally sufficient after a little time, but sometimes the nail is so much thickened that the edges cannot be raised up to admit the threads of lint. In this case the centre of the nail may be softened by dabbing on caustic potash, and then the nail is easily thinned down by scraping with a sharp knife till it becomes pliable. When the skin at the side of the nail bleeds very readily, this is remedied by touching

NARES

with blue-stone or with nitrate of silver.

NARES means the nostrils.

NAUSEA means a feeling that vomiting is about to take place. (*See* VOMITING.)

NAVEL is the scar on the abdomen marking the point where the umbilical cord joined the body in embryonic life.

NECK is that portion of the body which extends from the upper limit of the chest to the base of the skull. Its main function is to support the head. Through its front part run the passages for the air and the food. The great bulk of the neck is composed of seven cervical vertebræ with the muscles attached thereto, in front and behind. Within the canal formed by the rings of these vertebræ lies the cervical part of the spinal cord, from which proceed the nerves that control the movements of neck and arms.

NEOPLASM, which means literally a 'new formation', is another word for tumor.

NEPHRITIS means inflammation of the kidneys. (*See* BRIGHT'S DISEASE.)

NERVES.—The nervous system consists in part of cells and in part of fibres, each of which is a long process extending from a nerve-cell. The nerve-cells are situated mainly in the grey matter of the brain and spinal cord, while the white matter of these parts, and the nerves which run through the body, are made up of nerve-fibres.

The nerve-cells originate, or receive, impulses and impressions of various sorts, which are conveyed from them to muscles, blood-vessels, etc., by 'efferent' nerves, or received by them through 'afferent' nerves coming from the skin, organs of sense, joints, etc.

NERVE INJURIES are produced by several causes. Continued or repeated severe pressure may be enough to damage a nerve seriously, as in the

NERVOUS DISEASES

case of a badly made crutch pressing into the armpit and causing drop-wrist. Bruising due to a blow, which drives a superficially placed nerve against a bone, may inflict severe damage upon a nerve such as the musculo-spiral nerve behind the upper arm. A wound may sever nerves with other structures, and this accident seems specially liable to occur to the ulnar nerve in front of the wrist, owing to falls upon broken glass, and to various nerves in the armpit when the humerus is fractured near its upper end. Exposure to cold may also damage a nerve severely, as in the case of the facial nerve, when Bell's paralysis results.

An operation designed to unite a damaged nerve and relieve paralysis may sometimes be successfully performed even some weeks or months after the wound has closed. Massage and galvanism of the muscles keep them from wasting till the nerve is ready to take up its functions again.

NERVOUS DEBILITY (*see* NEURASTHENIA).

NERVOUS DISEASES.—This class of disease is one of the most difficult of diagnosis, and frequently the most unpromising, as regards treatment, of all bodily affections.

The following conditions are treated of under their proper headings: APOPLEXY, BRAIN DISEASES, CRAMP, DISSEMINATED SCLEROSIS, EPILEPSY, HYSTERIA, INSANITY, LOCOMOTOR ATAXIA, MENTAL DEFECTIVENESS, NERVE INJURIES, NEURALGIA, NEURASTHENIA, NEURITIS, PARALYSIS, ST. VITUS'S DANCE, SPINAL CORD, DISEASES OF.

Symptoms.—There are two great symptoms of nervous disease, viz. (1) disturbances of sensation in the direction either of loss of feeling, or of great pain, or of perverted sensation, such as tingling, hot flushes, etc.; and (2) the occurrence of more or less complete paralysis of groups of muscles, or of whole limbs. One

NERVOUS DISEASES

or other of these types of symptoms predominates, according as sensory or motor nerves are chiefly affected. In addition to these, there is in different diseases more or less interference with the organs of special sense, the reflex actions, the nutrition of outlying parts of the body, and the functions of internal organs.

Treatment.—Rest, which gives an opportunity for repair to the worn-out tissues, is the great remedy in all types of disease due to overstrain of body or mind, shock, or inflammatory processes. Rest in its widest sense includes not merely stoppage of activity, but suitable food, change of employment, and, it may be, active exercise in persons who have usually much mental work. Certain drugs, such as bromides, have the power of dulling the activity of the nervous system, while others, such as strychnine, increase its excitability, and the administration of drugs, on one or other of these lines, often is useful in assisting the curative efforts of nature. These effects too are sometimes aided by such devices as cold applications to the head and back, and by baths. Where changes in the nervous system are the result of poisons, such as those of syphilis or lead, appropriate drugs hasten their expulsion from the body, and thus check the progress of the disease. Generally speaking, alcohol has a prejudicial effect in all forms of nervous disease, and particularly is this true in those diseases like neuritis, which are caused by it, and in which its use must be absolutely stopped. Various forms of electrical application have been employed in the treatment of nervous disease, and the routine use of this form of treatment appears often to be of considerable benefit. (*See ELECTRICITY IN MEDICINE.*) There is no department of medicine in which the sub-conscious moral influence of a self-reliant and expert physician is more marked than in the treatment

NETTLE-RASH

of functional nervous disorders, and the confidence reposed in the medical adviser and in the treatment employed is often sufficient, in these cases, to start the patient upon the road to improvement, which it requires only time, rest, and the constant exercise of a certain amount of will-power to complete.

NETTLE-RASH, or **URTICARIA**, is a disorder of the skin characterised by an eruption resembling the effect produced by the sting of a nettle, namely, raised red or red and white patches occurring in parts or over the whole of the surface of the body, and attended with great itching and irritation. It may be acute or chronic.

Symptoms.—In severe cases there is at first considerable feverishness and constitutional disturbance, together with sickness and faintness, which either precede or accompany the appearance of the rash. The eruption may appear on any part of the body, but is most common on the face and trunk. In the former position, it causes swelling and disfigurement while it lasts, and is apt to excite alarm in persons unacquainted with its nature. The attack may pass off in a few hours, or may last for several days, the eruption continuing to come out in successive patches. Occasionally a similar process takes place in the throat, and there is then considerable danger from blockage of the larynx.

Treatment.—The acute variety generally yields quickly to a purgative and the use of some antacid, such as magnesia, or bicarbonate of soda. A powder composed of rhubarb, carbonate of bismuth, and soda is useful when taken internally. The local irritation is allayed by sponging with a warm alkaline solution (a teaspoonful of soda or ammonia to a tumblerful of warm water), with Goulard's water, or by rubbing with menthol. In the chronic form, in addition to these remedies, any con-

NEURALGIA

stitutional morbid condition, such as gout, will demand special attention. When the condition habitually follows on taking a certain article of diet, this should be carefully noted and avoided in future.

NEURALGIA, literally *nerve pain*, is a term which is frequently employed both technically and popularly in a somewhat loose manner, to describe pains the origin of which is not clearly traceable. Hence the word is generally used to indicate pain affecting a particular nerve or its branches, whatever be the cause.

FACIAL NEURALGIA is one of the most common forms of neuralgia, and one of the most severe. It affects the great nerve of sensation in the face (fifth nerve), and may occur in one or more of the three divisions in which the nerve is distributed. It is usually confined to one side. Females suffer, on the whole, more frequently than males, and adults or young persons more than children or the aged. Among the more prominent conditions associated with it may be mentioned a low state of health resulting from previous disease, any drain upon the system (such as excessive menstruation, over-lactation, etc.), and, very specially, over-exertion of body or mind and mental anxiety. The attack is often brought on by the irritation of a decayed tooth or by exposure to cold air.

MIGRAINE and **SICK HEADACHE** are terms employed to describe a condition which appears to be of similar nature to neuralgia. (See **HEADACHE**.)

INTERCOSTAL NEURALGIA is pain affecting the nerves which come from the spinal cord and run along the spaces between the ribs to the front of the body. It is sometimes associated with shingles.

SCIATICA is another of the more common forms of neuralgia. It affects the great sciatic nerve which comes out from the pelvis and runs down the back of the thigh. It is in

NEURALGIA

most instances traceable to exposure to cold or damp, to over-use of the limbs in walking, etc. ; but there are many other possible causes. Any source of pressure upon the nerve within the pelvis, such as may be produced by a tumor or even by constipation of the bowels, may excite an attack of sciatica. It is often connected with a rheumatic or gouty constitution. In general, the nerve of one side only is affected, and, when constipation is the cause, the affected nerve is usually the left. The pain, which is felt at first a little behind the hip-joint, steadily increases in severity and extends along the course of the nerve and its branches in many instances as far as the toes. The specially painful points are where the nerve issues from the pelvis at the lower margin of the buttock, and about the knee and ankle joints ; besides which a feeling of numbness is sometimes experienced throughout the whole limb.

Treatment.—With all forms of neuralgia, it is of the first importance to ascertain, if possible, whether any constitutional condition is associated with the malady, and, if evidence of the presence of rheumatism, gout, anemia, etc., be discovered, to administer along with the local remedies for neuralgia, the salicylate of soda, iodide of potassium, iron, etc., required for the constitutional condition.

Naturally also one looks for, and as speedily as possible removes, any source of local irritation, such as a decayed tooth, and also any such reflex source as uterine or intestinal disorder.

During the time an acute attack lasts, various local applications give relief, the most useful being, perhaps, hot fomentations containing laudanum applied over the painful part. Bathing with water as hot as can be borne is also beneficial in many cases. Rubbing or painting with a mixture of the liniments of aconite, belladonna,

NEURASTHENIA

and chloroform; or a mixture, in equal parts, of chloral, camphor, and menthol, rubbed up together and painted over the part, is very soothing.

Internally, during an acute attack, many remedies are given. Those which are most generally useful, and which may be safely used without any tendency to bring about habitual use, are phenacetin, antipyrine, and other coal-tar preparations. (*See ANTIPYRINE.*)

When the neuralgia has assumed a chronic type, or when the acute attacks recur with great frequency, a totally different type of treatment is in general requisite. Plentiful nourishment and tonics, such as arsenic and strychnine, in these cases are more often beneficial.

As regards local measures in the chronic state, the application of blisters or counter-irritation is the remedy most employed. The use of galvanic electricity is often beneficial both in the acute and chronic stage. Diathermy is also frequently employed with soothing effect. (*See DIATHERMY.*) Baths of various sorts, particularly alternate hot and cold baths, or douches, and the hot-air bath are also sometimes of use. (*See BATHS, DOUCHES.*) Massage, though it increases the pain in the acute state, may be of great benefit in chronic cases due to some inflammatory process in the nerve. In cases of sciatica particularly, great and often surprising benefit is derived from occasional free purgation by a large dose of castor oil.

Many cases resist all forms of medicinal treatment, and for these surgical procedures are often tried.

NEURASTHENIA means a condition of nervous exhaustion in which, although the patient suffers from no definite disease, he becomes incapable of sustained exertion. The condition is closely allied to several unusual mental states, such as hypochondriasis and hysteria, and there is no

NEURASTHENIA

sharp line between neurasthenia and hysteria, intermediate cases of every grade being met with. To these conditions the general name of neuroses is given.

Symptoms.—The most prominent and constant symptom is that of weakness and weariness on exertion. The person may feel fresh enough in the early part of the day, but after very slight effort he becomes exhausted, and trembles. The appearance changes, the person becoming puffy under the eyes, sallow and bloodless. Generally, the neurasthenic person loses appetite and digestive power and becomes painfully thin as well as weak, but in some cases the change is towards a fat, flabby habit of body. A condition of 'irritable weakness' develops throughout the body, in the heart, stomach, bowels, and other organs so that the person suffers from palpitation, loss of appetite with dyspepsia after taking the simplest food, and griping pains in the abdomen, generally associated with obstinate constipation. As a result colitis is apt to appear in neurasthenics, and this by leading to further poisoning of the system prolongs the disease and makes its treatment more difficult. Though in the early stages the person may be overcome with sleep when tired, sleeplessness is a wearisome symptom later on. The temper changes also, the sufferer becoming, as a rule, intensely irritable and emotional. Another mental peculiarity is a failure to distinguish trifling from essential things, so that the neurasthenic becomes worried by the smallest incidents and a prey to groundless fears and to anxiety over unlikely misfortunes, rendering himself thus unfit for transacting business.

Treatment.—In early and slight cases, a complete holiday, with the cessation of all business and intellectual work, is often sufficient in a month or two to bring about a cure. The person should always leave home for a new environment, and, generally

NEURITIS

speaking, the cares and associations of daily life should be cut off by a complete severance for a time from relatives and friends. An attempt should be made to stimulate the appetite by tonics, fresh air, etc., and the amount of exercise must be proportional to the food taken, growing more vigorous as the appetite improves. The treatment of constipation and sleeplessness is also of great importance.

In those cases where thinness and loss of appetite are marked features, so that physical effort becomes a great burden, the form of feeding known as Weir-Mitchell treatment is often advantageous. Briefly put, this consists of: (a) complete rest in bed with entire absence of physical and mental effort; (b) feeding, which begins with small quantities of milk, and is gradually increased as the digestion will stand it, till the patient takes three full meals of highly concentrated food every day; and (c) regular massage, by an attendant, which takes the place of exercise, but is unaccompanied by any discharge of nervous energy. This treatment is continued for one or two months, and is often attended by surprising benefit. Electrical applications and sunlight treatment are also frequently helpful. For the headaches and for sleeplessness, bromide of sodium or of ammonium in small doses (5 grains) frequently repeated is the most useful drug. The class of patient who is suffering from anxiety or morbid apprehension is especially improved when the cause of anxiety can be discovered and removed. In cases of accident this is often achieved by a financial settlement of any outstanding claim.

NEURITIS means inflammation affecting a nerve or nerves which may be localised to one part of the body, as, for instance, in sciatica, facial neuralgia due to this cause, etc., or which may be general, being then known as 'multiple neuritis', or 'polyneuritis', or 'peripheral neuritis'. The principal forms of localised neur-

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itis have been dealt with under NEURALGIA.

In **MULTIPLE NEURITIS**, which is always due to some general or constitutional cause, the nerve-fibres in the small nerves degenerate and break down. Hence the very protracted nature of this malady. The cause of this degeneration may be said, in general terms, to be in every case some poison either taken into or produced in the body, and circulating in the blood. By far the commonest of these poisons is alcohol, while lead or arsenic taken into the body in small quantities over long periods is also sometimes responsible for neuritis. Those who suffer from diabetes are also prone to neuritis, and gout is occasionally accompanied by neuritis. Several of the acute infectious diseases, especially diphtheria and typhoid fever, are apt to be followed by neuritis, the paralysis which very commonly follows diphtheria and forms an annoying and often dangerous complication being due to this cause.

In most cases multiple neuritis begins with vague pains and tingling in the limbs; weakness and wasting of the muscles in the feet and legs, in the hands and arms, or in other parts, following later. Wrist-drop, a peculiar form of walking in which the person lifts his feet as if he were constantly stepping over small obstacles, squinting, loss of voice, or difficulty of breathing, may appear according to the muscles whose nerves are affected.

Treatment.—Removal of the cause, rest to the affected parts, at a later stage massage and electrical applications, and sometimes the administration of strychnine and other drugs, are of value in the treatment.

NEUROSIS is a general term applied to any nervous disease, but especially to disorders of the function of parts of the nervous system not dependent on any discoverable disease or injury. (*See NERVOUS DISEASES, HYSTERIA, NEURASTHENIA.*)

NEUROTIC is a general term of indefinite meaning applied to a person of nervous temperament, whose actions are largely determined by emotions or instincts rather than by reason.

NIGHTMARE (*see* SLEEP).

NITRATE OF SILVER, also known as **LUNAR CAUSTIC**, is a salt of silver, very soluble in water, and generally prepared in sticks. In weak solution it has a strong astringent action, and in the pure form it acts as a powerful caustic. It is very slowly discharged from the system, and, if used for any great length of time, it is apt to produce a brown discoloration of the skin all over the body.

Locally it is used as a caustic, acting painlessly on warts, etc. As an astringent it is used in many inflammatory conditions of mucous membranes, in the form of gargles, sprays, and douches.

NITRITES are salts which have a powerful effect in dilating the blood-vessels, and checking spasm of all sorts. The most commonly used nitrites are nitrite of amyl, of ethyl, and of sodium. Nitroglycerin has a similar action. (*See* NITROGLYCERIN.)

NITROGENOUS FOODS are those that contain a large proportion of protein (albuminous) material in their composition. Generally speaking, this class comprises the foods of animal source, though some vegetables, notably the pulses, contain large quantities of protein. The use of a certain amount of nitrogenous food is necessary to the system, as from this source alone can the body derive all the building material it requires to repair daily waste. (*See* DIET and MEAT.)

NITROGLYCERIN, also known as **TRINITRIN** and **GLONIN**, is a thick oily liquid of sweet taste and powerfully explosive properties. When a small quantity is taken internally it produces marked effects in about two minutes, relaxing the arteries so as to cause the skin to flush visibly,

quickening the pulse, and causing a sense of fullness all over the body and throbbing in the head. It greatly lessens the blood-pressure. It is used in the form of liquor of trinitrin or made up with chocolate into tablets.

NITROUS OXIDE GAS, also known as **LAUGHING GAS**, is a gas devoid of odour but of a slightly sweetish taste. It is kept under pressure in steel cylinders, from which it can be allowed to escape at any desired rate by turning a stop-cock. Its use in medicine is to produce insensibility to pain, which it does very quickly, and with a great degree of safety, though the effect is of very short duration, not extending beyond two or three minutes. Its use is therefore applicable only for short operations, such as extraction of a tooth, unless it be repeatedly administered in association with oxygen.

NOSE.—The nose has two functions to perform, being the upper end of the air passages which lead to the lungs, and also lodging the organ which furnishes the sense of smell. As in the case of the ear, the part of the nose which projects from the surface is comparatively unimportant, except from an æsthetic point of view, the main part of the cavity being placed above the roof of the mouth, from which it is separated by the hard palate, and opening behind by the posterior nares into the throat.

In its interior, the nose is completely divided into two narrow cavities, one on each side, by a septum or partition running from front to back. This septum is a thin plate partly composed of bone, partly of cartilage.

The cavities on either side of the septum, known as the *nasal fossæ*, are extremely narrow, being at their widest point less than $\frac{1}{4}$ inch in breadth, though in height they correspond to the length of the nose, and run directly backwards about 2 inches. On each outer wall three projections, known as the turbinated

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bones, form ridges which run from before backwards, and each ridge is curled over so that its edge looks downwards. There are therefore three passages (meatus) on either side of the nose, running from before backwards, each under cover of a corresponding turbinated bone. The air in its passage through the nose is by this arrangement brought in contact with a large surface of mucous membrane, and thus is considerably warmed and moistened before it enters the bronchial tubes and lungs.

NOSE, DISEASES OF.—The nose, so far as the skin covering is concerned, is subject to the same diseases as the skin of other parts. Redness of the skin of this part may be, on account of its disfiguring character, very annoying. It may be due to poor circulation in cold weather, partaking of the nature of a chilblain (*see* CHILBLAINS); very frequently it is due to constant indulgence in alcohol (*see* ACNE ROSACEA); habitual indigestion also tends to bring on a condition of redness (*see* DYSPEPSIA), while any chronic state of inflammation or source of irritation in the interior of the nose may manifest itself by redness on the surface.

ACUTE INFLAMMATION of the nose (ACUTE RHINITIS) is generally a catarrhal condition affecting the mucous membrane, and is commonly known as a 'cold in the head'. (*See* CHILLS AND COLDS.) It may be due, though less commonly, to the inhalation of irritating gases. Boils occasionally develop just within the entrance to the nose in connection with the hairs there, and in this locality give rise to great pain and considerable danger. (*See* BOILS.)

CHRONIC INFLAMMATION (CHRONIC RHINITIS) is a very common condition of the nose, and in a mild form may exist for years without attracting much attention.

Symptoms.—The most marked symptom is increased secretion from the swollen mucous membrane, caus-

NOSE, DISEASES OF

ing constant running at the nose, together with a feeling of 'stiffness'. It is necessary to blow the nose very frequently, or the person is continually 'hawking' mucus in the back of his throat. In some persons, however, instead of constant running of the nose, the inflammation is of a dry type, and the swollen mucous membrane becomes covered by crusts which are difficult to dislodge. Sneezing is also a common symptom, resulting from the constant irritation in the nose, and a feeling of obstruction in the nose is usually experienced when the person lays his head down at night.

Treatment.—Care must be taken by those with a tendency to chronic inflammation of the nose to avoid catching colds. The condition of the mucous membrane can be greatly improved and the inflammation soothed by the use every night and morning of one of the following lotions, applied to the nose either by means of a hand-spray or from a nasal syringe or douche. (1) Sodium bicarbonate 30 grains, sodium chloride 30 grains, borax 30 grains, white sugar 60 grains, rose water 8 ounces: a small quantity of this to be mixed with an equal quantity of hot water before use. (2) A teaspoonful of sodium bicarbonate and common salt mixed in equal parts, added to a tumblerful of warm water.

When the nose is to be washed out, a boat-douche or rubber ball-syringe may be used, or the fluid may simply be snuffed up from a cup or from the hollowed palm of the hand. The lotion must always be used lukewarm. A considerable amount of fluid should be used each time the nose is douched, and the fluids used as gargles may be employed. In douching, the boat or syringe should be held so as to plug up one nostril while the fluid runs in. The mouth at the same time should be kept wide open and the breath be drawn quickly backwards and forwards through it, so as to keep the soft palate raised and thus prevent

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fluid from running down the throat. The solution will then pass up one nostril and out of the other, or, if the second one be closed by pressure with the finger, the whole nasal cavity may be filled with the fluid. The nose is finally cleared by blowing down each nostril in turn, while the other is kept closed with the finger. Forcible syringing of the nose is to be avoided.

When the mucous membrane is much swollen and the nasal passage in consequence much blocked up, it becomes necessary to reduce this swelling in order to relieve the inflammation. This is done most effectively by the galvano-cautery, the little operation being repeated several times at short intervals, and being quite painlessly carried out after the nose is sprayed or swabbed with cocaine solution. In cases where the inflammation is perpetuated by the presence of malformations in the nose such as spurs on the septum, polypi, or suppuration in the sinuses, these conditions may be removed by operation.

When dry crusts tend to form and block up the nose they may be removed by the same alkaline douches, and also by the simple expedient of plugging up the nostrils with pieces of cotton-wool for a quarter of an hour, just sufficiently tightly to prevent air from passing out and in. If the latter plan be adopted the crusts are softened, a watery secretion is produced, and the crusts can be got rid of by gently blowing the nose, after the cotton-wool has been removed.

MALFORMATIONS OF THE NOSE are of various kinds. The external nose varies much in shape in different races, even in different families, and persons who desire to alter the character of this feature can mould the cartilages to a considerable extent by constant manipulation or by wearing various appliances.

ADENOIDS, or ADENOID VEGETATIONS, means an overgrowth of the glandular tissue which is naturally

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found in small amount on the back of the upper part of the throat, into which the nose opens.

Symptoms.—The appearance of a child suffering from adenoids is highly characteristic. The mouth is kept constantly open, since breathing proceeds through it, and, as a result, the child is very liable to bronchitis, and he snores at night. The point of the nose is pinched and the nostrils narrow, since very little air passes through them, and the bridge of the nose is often flattened. The palate is highly arched and the front teeth often prominent. If the child be weak or rickety, the obstruction to the entrance of air into the chest is very apt to produce a 'pigeon-breast'. Deafness, as the result of inflammation spreading up the Eustachian tubes from the throat to the drum of the ear, is very common, and may be permanent. The irritability of the nervous system, occasioned by the difficulty of breathing during sleep, render these children, much more than others, prone to suffer from nightmare, and from the habit of wetting the bed at night.

Treatment.—It is not the occurrence, but the overgrowth of adenoids that gives rise to trouble in children, and, even if large, they tend to subside as the child advances in years. It is often difficult to decide, therefore, whether an operation for their removal should be performed or not. Apart from any serious symptoms that may be occasioned, such as deafness or choking, which certainly call for operation, the usual test employed is the question as to whether the child can go about quietly without becoming short of breath, and can sleep with his mouth shut. The operation—which is simple, consisting in scraping the adenoids away with the curette or other instrument, and in cutting out the tonsils which, as a rule, are enlarged, along with the adenoids—is performed under an anæsthetic such as ethyl chloride.

NOVOCAIN

POLYPI are growths of a soft, jelly-like character, with more or less of a stalk. They are the result of chronic inflammation in the hinder part of the nasal cavity, produced by frequent colds, following on some of the acute infectious diseases, or due to suppuration in one of the air cavities adjoining the nose.

BLEEDING FROM THE NOSE is treated of under hæmorrhage. (See HÆMORRHAGE.)

FOREIGN BODIES, such as buttons, slate pencils, peas, and small stones are often pushed into the nose by children, and as the floor of the nose slopes slightly backwards and downwards, they readily pass in beyond reach.

Treatment.—Tickling the nostril with a feather, or giving a large pinch of snuff, to provoke a vigorous sneeze, while the opposite nostril is closed by pressure with the finger, should be tried first of all. Very often this will drive out the stone, pea, etc. If not, removal by a medical man, aided by a speculum and a bright light, is comparatively easy, much more so than in the case of bodies pushed into the ear.

LOSS OF SENSE OF SMELL may be caused by polypi and chronic inflammation. Certain drugs, such as carbolic acid, are very destructive of this sense, and donching the nose with carbolic lotion has been known to produce loss of smelling power. Influenza and even a severe cold in the head sometimes cause it, and so do injuries to the brain and fractures of the skull involving the olfactory nerves.

SUPPURATION IN THE SINUSES connected with the nose is of fairly frequent occurrence, especially in the cavity within the upper jaw immediately above the palate and roots of the upper teeth. Here it is fairly easily remedied by an operation which opens the sinus and allows it to be washed out.

NOVOCAIN, or **KEROCAIN**, is a substitute for cocaine manufactured

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in the laboratory and having an action similar to the natural alkaloid. It is a powerful local anæsthetic with transitory effect.

NURSING.—Information on various special subjects arising in the course of nursing the sick will be found under ANTISEPTICS, ASEPSIS, BATHS, BED, BED CHANGING, BED SORES, BLISTERS AND COUNTER-IRRITANTS, CATHETERS; CHILDREN, PECULIARITIES OF; CUPPING, DIET, DISINFECTION, DOUCHE, ELECTRICITY IN MEDICINE, ENEMA, FOMENTATIONS, FOOD, GARGLES, HÆMORRHAGE, INFANT-FEEDING, INFECTION, LIGHT, MASSAGE, PEPTONISED FOODS, POULTICES, TEMPERATURE, VENTILATION, WET PACK, WOUNDS.

The following remarks upon home nursing are made under the two headings of—(1) *The sick-room*. (2) *The patient*.

(1) **The sick-room.**—The situation of the room is a matter of some importance. It must be bright and sunny, and should therefore, if possible, look to the south or south-west. It should be as much cut off from the general household as possible, and should, therefore, be at the end of a corridor or top of the house, and in infectious cases may be still more effectively isolated by hanging, outside the door, a sheet sprinkled from time to time with weak antiseptic lotion. This allows of the door being left open if necessary. Good drainage is of the utmost importance, and in surgical and lying-in cases particularly, there should be no sink or fixed basin in the room, as septic poisoning has been traced to impurities derived from these. The room should in every case be as large and airy as possible, for coldness is a minor danger and of far less importance than defective ventilation.

The great test of *ventilation* is the presence or absence of the faintest 'stuffy' smell in the room, and if the room be of fair size this may be prevented by leaving the window con-

stantly open so far that the two sashes are clear of one another less than an inch, and filling in with a strip of wood the space at top or bottom. If the patient complains of any draught, the window should not be shut, but the stream of air is kept off the bed by a screen or a sheet supported on a clothes-screen.

A thermometer should always hang on the wall, so that the *temperature* of the room can be kept fairly uniform, and a good average temperature is about 60° to 65° Fahr., though in bronchitis and other chest complaints it may be advisable to keep the air warmer.

A *fire* should always be kept on in a sick-room, for the purpose of burning dressings, rags, etc., even if not needed for warmth. In serious cases there should be no fire-irons, but the fire should be poked with a stick, and in the evening, pieces of coal should be laid on the hearth and placed on the fire with a paper or an old glove as required during the night, so as to avoid noise. When a patient is wakeful at night, a screen should be placed in front of the fire to keep the flickering light off the patient's eyes.

There should be as little *furniture* as possible in a sick-room. A bed, table, and two chairs are all that is absolutely necessary, and there need be no carpet save a small piece of drugget at the bed-side. Furniture should not be dusted, nor must the floor be swept during an illness, but the furniture may be wiped daily with a damp cloth, and the floor may be washed when required. As to the disinfection of a room after the nursing of an infectious case, see DISINFECTION.

When preparations are being made for a *surgical operation* at home, a large but narrow, strong deal table should be placed immediately before the window, and on it should be laid a couple of blankets, a large sheet of macintosh, and a clean pillow. Several basins and a large supply of

clean linen towels should be at hand, as well as a plentiful supply of boiling water, and a ewer full of water which has been boiled and set aside to cool, covered by a towel.

(2) **The patient.**—In putting an injured person to bed, it is important to remove the *garments* first of all from the sound arm or leg, and lastly from the injured limb, which is then moved as little as possible. For the same reason, in putting on garments the injured limb should be the first to have the garment drawn over it.

While a patient, and especially one greatly prostrated, lies in bed, one of the chief duties of the nurse is the care of his *skin*. The patient should be washed daily all over with warm water. The ordinary bed-clothes are removed before commencing the washing and aired at the fire; while the patient is covered during the process of washing by another blanket. During the washing it is quite unnecessary that the skin should be exposed, the blanket being raised over one part, which is washed and dried before the washing of another part is begun, so that there ought to be no risk of chill. Further, the back and all bony prominences must be examined at the same time for any trace of redness, which is the first sign of a bed sore, and treated promptly if any sign of a bed sore appears. (See BED SORES.) When the chest is affected, jackets made of two flaps of gamgee tissue, secured by tapes on the shoulders and beneath the arms, keep the chest warm, and are more easily removed for examination than more closely-fitting flannels.

Hot tins or bottles are often put in bed for warmth, and these should *never* be put in bed unprotected by a woollen covering. They may be placed in flannel bags, in stockings, or wrapped in shawls, and this precaution is specially necessary in the case of patients unconscious after a severe operation, or paralysed, and

so to some extent insensible of heat. Otherwise very serious burns may result.

In cases of rheumatism and Bright's disease, patients are generally placed directly between *blankets without sheets*, though a draw-sheet is necessary for cleanliness. The patient also wears a flannel night-dress, and the blankets and night-dress must then be changed and washed very frequently.

In cases of heart disease, there should be a number of pillows, if not a *bed-rest*, breathing being easier when the patient reclines in a half-sitting posture. When the patient has to sit up for long periods, an *air-cushion* makes this position easier, or a high table placed across the bed and provided with a pillow upon which he can lean his arms. Care should always be taken to keep the shoulders warmly wrapped up. When the legs are swollen or inflamed, they should be raised on a pillow, or the foot of the bed may be tilted up on wooden blocks.

Paralysed or helpless cases should be placed upon a *water-bed* from the first. A water-bed is most easily managed if it be in two sections, each covering half the bed. The water-bed is filled with water before the patient is laid upon it, and should not be quite tightly filled. It is separated from the patient by a blanket and sheet. The more modern *air-bed* is in many respects preferable to a water-bed. (See BED.) If, in paralysed or other cases, the weight of the bed-clothes be found irksome, they should be raised from the patient by an *iron-wire cage*, and it is then necessary to add an extra blanket to the coverings. Finally, it is well in nursing cases of long duration to have *two beds*, in one of which the patient spends the day and in the other of which he sleeps at night. Still better, if the circumstances of the house and the nature of the case permit, is the plan of having a day bedroom and a night bedroom.

Any *medicines* which the patient may have to take should be kept in a different part of the room from bottles containing lotions and other fluids intended for external application, and the nurse should never pour out a dose without previously reading the label on the bottle.

In *dressing* surgical cases, the nurse should boil any instruments she uses every day, and should wash her hands thoroughly with soap and water, and then steep them in such an antiseptic lotion as corrosive sublimate (1 in 4000) or lysol (1 in 100), before touching the injured part. She should also remember that abrasions or pustules upon her hands form a source of danger both to herself and still more to the patient, and these should be carefully covered with collodion.

The nurse attending an *infectious case* should have in the room constantly a basin containing corrosive sublimate lotion (1 in 2000), in which she can rinse her hands each time she touches the patient, and before going out to mix with other people she should take a bath, and put on a complete change of clothing.

In all cases the nurse must, in order to discharge her duties well, have good food, sleep eight hours in every twenty four, quite free from any chance of being roused to attend the patient, and have two hours daily for exercise.

NUTS (see FRUIT).

NUX VOMICA is the seed of an East Indian tree. It has an intensely bitter taste, due to two alkaloids, strychnine and brucine. (See STRYCHNINE.)

NYSTAGMUS means a condition in which the eyeballs show constant, fine, jerky movements of an involuntary character. The movement may be from side to side, from above down, or rotary; and it may be present only when the person looks in a certain direction. It appears in children who have some defect in vision, and it is caused by some occupations, such as that of miners, or by various nervous diseases.

OATMEAL is a meal made from oats. Two-thirds of its weight consists of starchy material in a dry state, but when cooked in the form of porridge it contains in addition about seven times its weight of water. To obtain an idea of the amount of the weight of dry oatmeal contained in a given quantity of porridge, one should divide the latter by the figure 8.

To prepare oatmeal as porridge, one should stir one cup of oatmeal into four cups of water, allow to steep after stirring for a short time, bring to boiling point, and steam for three hours.

OBESITY (*see* CORPULENCE).

OBSTRUCTION OF THE BOWELS (*see* INTESTINE, DISEASES OF).

OEDEMA means dropsical swelling due to the passage of fluid into the spaces of cellular tissue beneath the skin, or into the substance of internal organs. (*See* DROPSY.)

ESOPHAGUS, or GULLET, is the tube which conveys the food and drink from the throat down to the stomach.

OILS are divided into *fixed oils*, *volatile* or *essential oils*, and *paraffin oils*. **FIXED OILS** are of the nature of liquid fats, for example, olive oil, almond oil, linseed oil, and cod-liver oil. Fixed oils are used as foods, and some have important special properties by virtue of active principles that they contain, for example, castor oil and croton oil, which act as purgatives. Fixed oils are obtained from the fruits or seeds of plants or from animal tissues by pressure, or by boiling with water and skimming off the melted oil.

VOLATILE or **ESSENTIAL OILS** are such as oils of dill, anise, cajuput, caraway, cloves, cinnamon, eucalyptus, juniper, lavender, lemon, peppermint, rosemary, rue, mustard, and turpentine. The volatile oils have some actions in common by being in small doses antispasmodic, dullers of pain, and cardiac stimulants, and by

possessing a powerful antiseptic and disinfectant action. Most of them are prepared by distillation.

For oils of the petroleum series see **PARAFFIN**.

OINTMENTS are mixtures of medicinal substances with lard, benzoated lard, paraffin or vaseline, and wool-fat (lanoline), intended for external application. Those made up with lanoline, which is a natural skin fat, are much more readily absorbed than those, for example, made from paraffin, which is used for ointments designed simply to lie upon the surface. (*See also* LINIMENTS.)

Other substances occasionally used to form the body of an ointment are almond oil, bees-wax, camphor, glycerin, oleic acid, spermaceti, and prepared suet.

Among the most useful ointments are the following: *Simple ointment* is made of wax, benzoated lard, and almond oil, and is used for application to chafed surfaces. *Cold cream*, made of bees-wax, spermaceti, almond oil, rose water, and attar of rose, is used for a similar purpose. *Boric acid ointment* is much used for lubricating instruments, dressing ulcers, etc. *White precipitate ointment*, *sulphur ointment*, *tar ointment*, *salicylic acid ointment*, *mercury ointment*, and *zinc ointment* are used in various skin diseases. *Cocaine ointment*, *atropine ointment*, *aconitine ointment* are used for application to painful areas. *Yellow oxide of mercury ointment* is much used for treating inflammation about the eye.

OMENTUM is a long fold of peritoneal membrane, generally loaded with more or less fat, which hangs down within the abdominal cavity in front of the bowels.

OPEN-AIR TREATMENT (*see* CONSUMPTION).

OPERATION. — The preparations for an operation in a private house are mentioned in the article **NURSING**.

OPHTHALMIA

The method of healing after an operation is mentioned under WOUNDS.

OPHTHALMIA means inflammation of the eye, the term being used sometimes instead of conjunctivitis. (See *Conjunctivitis under EYE, DISEASES OF.*)

OPHTHALMOSCOPE is an instrument used for the examination of the back of the eye, and for the detection of defects in its transparent contents.

OPIUM, which is perhaps the most valuable remedy in the whole range of medicine, is the dried juice of the unripe seed-capsules of the white Indian poppy.

The importation into Britain of opium is very carefully regulated under the *Dangerous Drugs Act*. Similar regulations govern the sale and distribution of any preparation of morphine or diamorphine (heroin) stronger than 1 part in 500.

The preparations of opium are numerous and include extract of opium, compound ipecacuanha powder or Dover's powder (10 per cent opium), compound kino powder (5 per cent opium), used to check diarrhoea, aromatic chalk and opium powder (2½ per cent opium), lead and opium pill (12½ per cent opium). Of the liquid preparations, the tincture of opium (1 per cent morphine), also known as 'laudanum' and as 'black drop', is most used, in doses of about 20 to 30 drops; compound tincture of camphor, better known as 'paregoric', is used in doses of ½ to 1 teaspoonful; compound tincture of chloroform and morphia, which resembles 'chlorodyne' in composition. The alkaloids morphine and codeine are also used pure, and are given in various forms.

Uses.—Externally, opium has a wide use for application to areas which are painful and inflamed, as in lumbago, inflammation of joints, pleurisy, peritonitis, shingles, etc., and it is generally applied in the form of laudanum fomentations. (See *FOMENTATIONS.*) In toothache, a

OVARIES, DISEASES OF

few drops of laudanum may be put on wool into the cavity of the tooth, and in earache dropped into the ear.

Internally, its great use is to quiet severe pain, such as that of colic or cancer, and for this purpose morphine is often given with atropine, which aids the effect in diminishing any spasm present.

For treatment of chronic poisoning by opium or morphia see *DRUG HABITS*, and for acute poisoning see *Table under Poisons*.

OPSONINS are substances present in the serum of the blood which act upon bacteria, so as to prepare them for destruction by the white corpuscles of the blood.

ORBIT is the hollow in the skull, situated on each side of the nose, in which the eye is placed.

ORTHOPEDICS is a term applied to the general measures, surgical and mechanical, which can be used for the correction or prevention of deformities.

OSTEITIS means inflammation in the substance of a bone. (See *BONE, DISEASES OF.*)

OSTEOARTHRITIS is a term applied to a chronic inflammation of the bones composing a joint, and leading to deformity. (See *RHEUMATISM.*)

OTITIS means inflammation of the ear. (See *EAR, DISEASES OF.*)

OTORRHOEA means discharge from the ear. (See *EAR, DISEASES OF.*)

OVARIES.—The ovaries are the glands in which are produced, in the female sex, the ova, capable, if fertilised, of developing into new individuals. They are situated one on each side in the cavity of the pelvis, corresponding on the surface of the body nearly to the centre of the groin. Each is shaped something like an almond, is about 1½ inches long, ½ inch wide, and ¾ inch in thickness, and is whitish in colour.

OVARIES, DISEASES OF.—Though these organs are not essential to life, yet by reason of their

position within the abdomen, the repeated changes which take place in them, and their important nervous connections, disease in them may produce marked effects upon the general bodily and mental health—as, for example, when it results in hysteria—may be attended with great suffering, and may even be fatal.

INFLAMMATION OF THE OVARY (OVARITIS) is a fairly common condition. It may be acute, but is more frequently of a chronic type with acute relapses. It has many causes, arising, for example, after childbirth or a miscarriage which has been attended by some infective process. The occurrence of peritonitis, in which adhesions are formed between the ovary and neighbouring organs, is also a cause. Displacement of the ovary, with or without displacement of the womb, is practically always attended by more or less inflammation, often of a very severe type. Ovaritis may also result from infection passing upward from the vagina and womb.

Symptoms are very indefinite. There is always pain in the side and back, accompanied by great tenderness to touch over the position of the inflamed ovary. In the chronic form, the menstrual periods may show excessive discharge, and at such times the pain becomes much worse. Later on, as the ovary shrivels up, the periods often prematurely pass off altogether, and sterility results. In many cases, as the result of long-continued pain and discomfort, the person becomes a permanent invalid. Sometimes an abscess forms, and this is a very serious complication.

Treatment.—Prolonged rest in bed, with the patient lying on her back, and subsequent avoidance of violent exercise, together with great care of the general health, are essential. Fly-blisters over the region of the ovary, the internal administration of brom-

ides and other sedative drugs, the use morning and evening of the hot vaginal douche, and the careful regulation of the bowels by saline aperients, form the course of treatment generally adopted. Pessaries of various sorts are introduced in order to give support to the ovary if displaced, or to exert some medicinal action upon its state of congestion and inflammation. Finally, if all these milder means fail, the condition of pain and discomfort may occasionally be so great as to justify the serious operation of removing the inflamed ovary entirely.

OVARIAN TUMORS may be of several kinds. Solid tumors, either simple or malignant, are rare, far commoner being the cystic forms, which often reach a huge size.

Symptoms.—These tumors generally remain quite painless till the weight and distension caused by their increasing size give trouble. If they are not removed, some, which stand on the verge of being malignant tumors, increase rapidly in size, and all lead to great discomfort and loss of health, and finally shorten life.

They may, when of large size, be removed by operation (ovariotomy).

OXYGEN is a colourless gas, devoid of smell, slightly heavier than air.

Oxygen is necessary to life, and the process of respiration (*see* RESPIRATION) has, as one of its main objects, the supply of oxygen to the blood. In cases where the pulse is quick and feeble, where the patient's lips and ears are blue, and where the breathing is rapid and shallow, the administration of oxygen gives great relief.

Oxygen is stored in cylinders, and for administration a rubber tube is attached to the head of the cylinder, and to a mask, which fits over the patient's nose and mouth, or, preferably, to a rubber catheter which is passed into one of the nostrils. The patient usually is allowed to inhale the oxygen for periods of 15 or 20 minutes, repeated as often as desired.

PAIN is of various types. The most important is that caused by injury of the skin, as by a prick, burn, or pinch. This sense is quite distinct from that of touch.

Internal parts are much less sensitive than the skin, and diseases in them usually give rise to a different sensation. Indeed these parts, not being liable to damage by external objects, are not endowed with the power of feeling pain due to sudden injury, so that the bowel, when brought out through the skin, may be cut with scissors or knife, though the individual, unless he sees it, is quite unaware of what is taking place; tendon, muscle, and bone are also very insensitive.

Nevertheless inflammatory changes in these deep-seated structures, and disturbances in their functions, may produce the severest type of pain. This inflammation, particularly when seated in dense structures which cannot expand, causes the congested blood-vessels of the part to press upon its nerves, and is accompanied by 'throbbing' pain, and, in bone particularly, this is apt to be of a 'boring', excruciating character. The 'gnawing' pain of a tumor invading surrounding tissues is of a similar nature, and any source of irritation on the course of a nerve is apt to produce the severe pain of 'neuralgia'. Another example is the colic or 'gripping' pain, caused by spasm of the bowels, bile-ducts, ureters, etc., which in its severest forms may properly be designated 'agony'. (See COLIC.)

Painful sensations depend much also upon the state of the nervous system, varying according to the power of the nerves to conduct, and of the brain to receive impressions. Some persons are notoriously better at bearing pain than others, and the healthy and strong are less affected by trivial injuries than those whose nervous system is in a state of ready irritability through chronic ill-health.

On the other hand, pain may be of a purely 'functional' character, and a person of highly-strung or disordered nervous system may suffer pain without any external cause, the mind misinterpreting or exaggerating sensations which by the healthy person would not be noticed. (See HYS-TERIA.)

These facts are well known to those 'faith-healers' and others who attempt to cure by a direct mental impression, and who by this means often succeed in alleviating pain, though only in special cases, such as the 'functional' pains just mentioned, are they fortunate in curing the disease to which the pain is due, and of which it is the warning.

Referred pain is often, in the case of the heart, stomach, liver, and bowels, felt on the surface situated over these organs, and the skin may be so tender that gentle pressure or even the slightest touch cannot be borne. Heart conditions are very liable also to cause pain running down the inner side of the arm to the elbow. In dyspepsia, the pain is often referred to the middle of the back. In conditions affecting the liver, there may be pain in the region of the right shoulder. Affections of the lower end of the bowel commonly cause pain down the back of the thighs, especially of the left thigh, to the knee. Pain due to disorders of the womb is felt internally much less often than in the lowest part of the back and the thighs.

Treatment of pain.—There are three general principles by which the relief of pain may be attempted. (1) The most natural way is to remove the cause of pain, such as a decayed tooth, ulcer, abscess, or inflammatory condition of some internal organ, or to soothe the nerves of the affected part by warmth or some other means. (2) The nerves which convey impressions from the affected region may be treated so that their conducting power

PAINS

is lessened or stopped, as, for example, by administration of bromides, use of electricity, or even division of the nerves, as in neuralgia. (See NEURALGIA.) (3) The part of the brain which receives the impressions of pain may be dulled by drugs, such as opium and antipyrine, or the influence of these impressions may be prevented by powerful mental impressions, as in hypnotism, faith-healing, etc.

PAINS (see LABOUR).

PALATE is the partition between the cavity of the mouth, below, and that of the nose, above. It consists of the *hard palate* towards the front, which is composed of a bony plate covered below by the mucous membrane of the mouth, above by that of the nose; and of the *soft palate* farther back, in which a muscular layer, composed of nine small muscles, is similarly covered.

PALATE, MALFORMATIONS OF.

—The palate is subject to certain alterations, as the result of defective development. The hard palate may be much more arched than usual, and this is said often to be the sign of a feeble brain, though it may also be due to the failure to breathe through the nose, caused by the presence of adenoid vegetations in the throat. (See NOSE, DISEASES OF.)

There may be a state of 'cleft-palate'; or there may be only a partial gap in the soft palate, the parts having closed in front; or again, there may be closure behind and only a notch be left in the lip or a single cleft in the edge of the upper jaw. The notch of the lip is known as 'hare-lip', from a fanciful resemblance to the hare, which has a notch in the centre of its lip.

Cleft-palate and hare-lip should, if possible, be rectified by operation, because both are a serious drawback to feeding in early life, while later, hare-lip is a great disfigurement, and cleft-palate gives to the voice a peculiar twang.

PALPITATION is a condition in

PANCREAS, DISEASES OF

which the heart beats forcibly or irregularly, and the person becomes conscious of its action.

Symptoms.—There may simply be a fluttering of the heart and a feeling of weakness, which is often expressively described as 'goneness'; or the heart may be felt pounding and the arteries throbbing, causing great distress to the affected person. In some cases the subject of palpitation is conscious of the heart missing beats.

Treatment.—Mental quietness is the great requisite to still the overaction, and all sources of excitement must be avoided. The person should understand that, however unpleasant the condition may be, there is no danger from it, and that serious disease is not usually the cause. Moderate exercise is a good thing. If the person be a heavy smoker, this is probably the cause, and tobacco should be given up. Similarly tea, coffee, and alcohol should be most sparingly partaken of, and any food likely to cause flatulent dyspepsia should be avoided. In the occasional cases due to serious organic disease of the heart, rest is the main requisite, and the condition causing palpitation requires appropriate treatment.

PALSY is another name for paralysis. (See PARALYSIS.)

PANCREAS or sweetbread is a long secreting gland situated in the back of the abdomen. It lies behind the lower part of the stomach. A duct runs through the whole gland from left to right, and leaving the head of the gland, unites with the common bile-duct from the liver to open into the side of the small intestine about 3 or 4 inches below the outlet of the stomach. The juice secreted by the pancreas plays an important part in digestion, and this organ is also the source of insulin.

PANCREAS, DISEASES OF.—

Owing to the depth at which this gland is situated, and the impossibility of examining its secretion, diseases affecting it seldom give very definite

PAPILLA

signs of their presence beyond failure of digestion, loss of health, and sometimes the appearance of swelling or tenderness in the upper part of the abdomen towards the right side. The occurrence of diabetes is frequent in connection with pancreatic disease. Abscess, cysts, and tumors may occur in this as in other organs, and a disease peculiar to the pancreas is the occurrence of hæmorrhages into its substance, especially in fat people, this being an occasional cause of sudden death.

PAPILLA means a small projection, such as those covering the tongue and projecting from its surface.

PAPULE means a pimple.

PARAFFIN is the general name used to designate a series of saturated hydrocarbon bodies of which some are oily fluids and others solid, like grease or wax.

Internally, petroleum, or fluid paraffin, has of late years been made into an emulsion as a substitute for cod-liver oil. It is said to stimulate the digestive organs and aid absorption of other foods, but is not itself a food. The thicker liquid paraffins are much used as an internal lubricant for prolonged administration in habitual constipation. This remedy is specially useful for old people; the dose is from a dessertspoonful to a tablespoonful taken in the evening or 3 times daily after food.

Externally, the hard and soft paraffins are used in various consistency, being very useful as ointments and lubricants by reason of their absolutely harmless nature. Petroleum, petrol, and various liquid paraffins are used to form the basis of sprays containing menthol and other drugs for application to the throat and nose.

PARALDEHYDE is a clear, colourless liquid with a penetrating ethereal odour, and a burning taste followed by a cool sensation in the mouth. It is given in sleeplessness, particularly when the heart's action is feeble, and

PARALYSIS

when other drugs might be dangerous. The usual dose is one teaspoonful.

PARALYSIS, or **P'ALSY**, means loss of power of muscular action due to interference with the nervous system. When muscular power is only weakened as the result of some affection of the nervous system, but not entirely lost in the parts concerned, the term '*paresis*' is often used instead of paralysis. Various terms are used to designate paralysis distributed in different ways. Thus '*hemiplegia*' is the term applied to paralysis affecting one side of the face, with the corresponding arm and leg, as the result of disease on one side of the brain; '*diplegia*' means a condition of more or less total paralysis, in which both sides are affected in this manner; '*monoplegia*' is the term applied to paralysis of a single limb; and '*paraplegia*' signifies paralysis of both sides of the body below a given level, usually from about the level of the waist.

Certain descriptive terms are used in popular language in connection with the word paralysis to indicate different diseases; thus '*creeping paralysis*' is a vague term applied most often to locomotor ataxia, '*shaking paralysis*' is the popular name for paralysis agitans, and '*wasting paralysis*' commonly means progressive muscular atrophy.

The distribution of the paralytic condition may be very extensive, involving more or less all the functions of the body, as in *general paralysis* of the insane (*see* GENERAL PARALYSIS).

1. PARALYSIS DUE TO BRAIN DISEASE.—Of this by far the most common form is palsy affecting one side of the body, or **Hemiplegia**. It usually arises from disease of the hemisphere of the brain opposite to the side of the body affected, such disease being in the form of hæmorrhage into the brain substance, or the plugging up of blood-vessels, and consequent arrest of blood supply to an area of the brain; or again, it may result from an injury, or be due to a

PARALYSIS

tumor in the tissues of the brain. The attack may come on as a stroke of apoplexy (*see* APOPLEXY), in which the patient becomes suddenly unconscious, and loses completely the power of motion of one side of the body, or a like result may arise more gradually and without loss of consciousness.

Trembling palsy, PARALYSIS AGITANS, or SHAKING PARALYSIS, is a peculiar form of paralysis characterised chiefly by trembling movements in certain parts, tending to become more widely diffused throughout the body. It is a disease of advanced life. The trembling is very manifest in walking, the act being preformed in a peculiar tottering manner with the body bent forward. The trembling movements cease during sleep. This disease is a chronic one, and is little improved by treatment, but life may be prolonged for many years. The condition may develop in younger persons after an attack of encephalitis (sleepy sickness).

Functional paralysis includes other forms of paralysis which are not connected with any discoverable disease of the brain. (*See* HYSTERIA.)

2. PARALYSIS DUE TO DISEASE OF THE SPINAL CORD.—Of paralysis from this cause, there are numerous varieties, depending on the nature, the site, and the extent of the disease.

Paraplegia is a paralysis of both lower extremities, including usually the lower portion of the trunk. All the parts below the seat of the disease in the spinal cord, including both motion and sensation, as well as the functions of the bladder and bowel are affected. It is a frequent result of injuries or disease of the vertebral column; also of inflammation affecting the spinal cord (*see* MYELITIS), as well as of hæmorrhage or tumors involving its substance.

Infantile paralysis, or POLIOMYELITIS, is a form of spinal paralysis, most commonly confined to one limb, which occasionally occurs in children,

PARALYSIS

and is caused by an inflammatory affection limited to the grey matter of the spinal cord throughout a greater or less extent, and affects therefore the function of motion, leaving that of sensation unimpaired. This disease is most common during the earlier part of childhood (although a similar affection is sometimes observed in adults). It has no tendency to progress nor to recover completely after the first attack. The general health, however, does not materially suffer.

Wasting palsy, or PROGRESSIVE MUSCULAR ATROPHY, is a disease usually occurring in middle life. It is characterised by the gradual wasting of certain muscles or groups of muscles, with a corresponding weakness or paralysis of the affected parts, and it depends on a slow inflammatory change in the grey matter of the spinal cord. It is insidious in its onset, and usually first shows itself in the prominent muscular masses in the palm of the hand, especially the ball of the thumb, which becomes wasted and deficient in power. It is slow in its progress, but, although it may occasionally undergo arrest, it tends to advance and involve more and more of the muscles of the body until the sufferer is reduced to a condition of extreme helplessness.

Bulbar palsy is a form of paralysis affecting the functions of the tongue, lips, and throat (besides others), and depending upon disease of certain parts of the medulla oblongata from which the nerves presiding over these functions arise. The disease is really the same disease as progressive muscular atrophy, at a higher level.

Progressive muscular dystrophy, MYOPATHY, or PSEUDO-HYPERTROPHIC PARALYSIS, is another form of paralysis, in certain respects resembling progressive muscular atrophy, though in it the change occurs in the muscles themselves, not in the nervous system. It begins in childhood, advances very slowly, and the muscles

PARALYSIS

are often large in size though feeble in power.

3. **PERIPHERAL PARALYSIS**, or local paralysis of individual nerves, is of frequent occurrence. Only the most common and important examples of this condition can be briefly referred to.

Facial paralysis and **BELL'S PALSY** are the terms applied to paralysis involving the muscles of expression supplied by the seventh nerve. It generally occurs as the result of exposure of one side of the head to a draught of cold air, which sets up inflammation of the nerve, but it may also be due to injury or disease either affecting the nerve near the surface or deeper in the bony canals through which it passes. The paralysis is manifested by a marked change in the expression of the face, the patient being unable to move the muscles of one side in such acts as laughing, whistling, etc., or to close the eye on that side.

A form of peripheral paralysis frequently results from chronic alcoholism. Other poisons also act similarly, as, for example, arsenic and lead. (*See NEURITIS.*) Injury to a nerve may cause paralysis in the muscles which it should supply, and this may follow on wounds, severe bruises, or even long-continued pressure, as in crutch-palsy, causing drop-wrist. (*See NERVE INJURIES.*) The paralysis occurring after diphtheria is another example of the peripheral variety, and similar paralyzes, for example of the foot, follow sometimes on other infectious diseases. (*See DIPHTHERIA.*)

Treatment.—It is impossible in a brief notice like the present to enter at any length into the treatment of the different varieties of paralysis. Generally speaking, the treatment consists of measures which aim at supporting the patient's strength and maintaining his health while the nervous system is slowly restoring itself so far as may be. The conditions of the disease in any particular case can only be understood and appreciated

PARATHYROID

by the medical expert, under whose direction alone treatment can be advantageously carried out.

An important point in the treatment is that, since paralysed muscles tend to undergo degenerative changes, their action should be maintained as long as possible. With the view of improving the circulation in the muscles, and also in order to prevent stiffening of the joints, massage is very useful. In order to exercise the muscles, the faradic current, or failing it the interrupted galvanic current, may be applied daily.

When acute symptoms have ceased, but not before this period, the use of nervine tonics, and, in certain cases, of substances which encourage tissue change, such as iodide of potassium and arsenic, is most important.

In the case of paraplegia there is a necessity for highly skilled nursing, since not only the patient's comfort but his life depends upon careful management, directed towards preventing bed sores (*see BED SORES*), and inflammation of the bladder (*see CATHETERS*) in cases where the act of urination is interfered with. A similar remark applies to bulbar palsy, in which special care is necessary in feeding the patient, owing to his difficulty in swallowing.

PARANOIA is the term applied to a form of fixed delusional insanity, in which the delusions, usually of persecution, all centre round some perverted idea and have an important bearing upon the insane person's actions.

PARAPLEGIA means paralysis of the lower limbs, accompanied generally by paralysis of bladder and rectum. (*See PARALYSIS.*)

PARASITES. (*See INSECTS IN RELATION TO DISEASE, ITCH and WORMS.*)

PARATHYROID is the name applied to four small glands which lie to the side of and behind the thyroid gland. Extract of this gland has been used in the treatment of various conditions of muscular defect such as

PARATYPHOID FEVER

tetany, chorea, paralysis agitans, and palpitation of the heart. Its action is somewhat similar to that of extract of the pituitary and suprarenal glands.

PARATYPHOID FEVER is a continued fever which closely resembles mild attacks of typhoid and which is due to bacilli very nearly allied to the typhoid bacillus.

PAREGORIC, or **COMPOUND TINCTURE OF CAMPHOR**, is a preparation of opium much used for cough mixtures. It contains, in addition to opium, oil of anise, benzoic acid, and camphor. Scotch paregoric with a similar composition is about double the strength of this tincture and more stimulating. Neither should be given to children without medical advice, but for adults the dose of either is from half to one teaspoonful.

PARESIS means a state of slight or temporary paralysis.

PAROTID GLAND is one of the salivary glands. It is situated just in front of the ear.

PARRISH'S FOOD is the name of a compound syrup of the phosphates of iron, lime, potassium, and sodium. It is greatly used for administration to weak or puny children.

PASTEURISATION is a method of sterilising milk which is not open to some of the objections attending boiling. The boiling of milk gives it a taste and smell which are disagreeable to some persons; it also coagulates part of the albumen and thus makes the milk less nourishing; and it interferes with its powers of preventing rickets, scurvy, and other diseases by destroying vitamins.

HIGH TEMPERATURE PASTEURISATION consists in heating the milk for 10 or 20 minutes at a temperature of 167° F. (75° Centigrade). This is sufficient to render harmless the germs of enteric and scarlet fevers and diphtheria, and also bacteria which give rise to summer diarrhoea in children. It also affords a considerable measure of protection against tuberculosis.

PELVIS

LOW TEMPERATURE PASTEURISATION consists in maintaining the milk for at least half an hour at a temperature between 145° F. and 150° F. (63° to 65° Centigrade). This has the effect of considerably reducing the number of bacteria contained in the milk and very greatly delaying souring and similar changes. This procedure is sufficient for the sale of milk as 'pasteurised milk' in England.

Various special forms of apparatus can be obtained for pasteurisation, of which two of the best known are Soxhlet's and Freeman's.

PATELLA, also known as the knee-pan or knee-cap, is a flat bone shaped somewhat like an oyster-shell, lying in the tendon of the extensor muscle of the thigh, and protecting the knee-joint in front. (See **KNEE**, **FRACTURES**.)

PECTORAL means anything pertaining to the chest or a remedy used in treating chest troubles.

PEDIATRICS means the branch of medicine dealing with diseases of children.

PELLAGRA is a chronic disease, showing a number of nervous, digestive, and skin symptoms which first make their appearance during the spring or autumn and recur year after year, improving to some extent during the winter months. It is chiefly confined to the poorer classes, especially agricultural labourers. It is regarded as due to deficiency of vitamins in the food, and is relieved by taking a richer diet.

PELVIS is that division of the skeleton which is made up of the haunch-bones, one on each side, and the sacrum and coccyx behind. It connects the lower limbs with the spine. The expanded parts of the haunch bones incompletely surround the lower part of the abdomen, known as the 'false pelvis'. The 'true pelvis' lies beneath, and, as its name implies, is basin-shaped, being well closed and rounded off by ligaments

PENIS

and muscles so as to leave small openings only for the urinary and genital passages and for the rectum. This soft 'floor' of the pelvis is composed mainly of two muscles.

The pelvis in the female is shallower and wider than the male pelvis, giving thus greater width to the hips and providing more space for child-bearing.

PENIS is the organ down which in the male passes the urethra, the tube by which the contents of the urinary bladder and those of the seminal vesicles escape.

PEPPER is the unripe fruit of a vine of the East Indies, which is used internally as a stimulant to digestion and with the view of diminishing flatulence.

PEPPERMINT is the leaves and tops of mint. It has an aromatic odour, due to the presence of an oil from which is obtained menthol, a camphor-like substance. (*See MENTHOL.*) Peppermint water is a very useful remedy for flatulence and colic in doses of a teaspoonful for babies and a tablespoonful or more for adults.

PEPSIN is the name given to a ferment found in the gastric juice which digests proteins (meat, fish, etc.). For the predigestion of food *see* **PEPTONISED FOODS**.

PEPTONISED FOODS. — Pepsin and pancreatin are extracts made from the stomach and pancreas respectively of newly killed animals, and used by persons of weak digestion, or those recovering from a severe illness, or those devitalised by age, in order to assist in the digestion of the food. They may be added to the food before it is taken into the stomach, being allowed to act upon it at a temperature a little above that of the body for a period of some minutes to several hours, or they may be given in solution, or as a powder in cachets, along with the food.

Peptonised milk is made by taking a quarter of a pint of cold water,

PERICARDITIS

mixing with it a peptonising tablet or peptonising powder, adding this to a pint of fresh milk in a quart bottle, and finally placing the bottle in a pan of water just so hot that the hand can be immersed in it without pain. The bottle of milk is left in this bath according to the amount of digestion desired, but not longer than ten minutes. If the milk be not immediately used, it must be placed upon ice or brought quickly to the boil in order to stop the action of the peptonising ferment.

Peptonised beef may be prepared as follows: A quarter of a pound of finely minced lean beef is mixed with half a pint of cold water, and cooked gently over the fire till it has boiled a few minutes. The liquor is then poured off, and the meat rubbed or beaten to a paste. The liquor and meat are placed next in a clean jar, and half a pint of cold water containing twenty grains of 'zymine' pancreatic extract (or a teaspoonful of liquor pancreaticus) and half a teaspoonful of bicarbonate of soda are added. The jar with its contents is covered and set aside in a warm place for three hours, and then boiled quickly to stop further peptonisation. The resulting liquid is seasoned with salt, and, if necessary, strained before use.

PERFORATION is one of the serious dangers attaching to any ulcerated condition of the stomach or bowels. When a perforation from one of these hollow organs takes place into the peritoneal cavity, many bacteria, together with putrescible material, are poured into this cavity and there set up peritonitis. (*See PERITONITIS.*) The immediate signs that a perforation has taken place are usually a state of collapse, and pain over the abdomen, together with, in some gases, the evidence of free fluid and gas in the peritoneal cavity.

PERICARDITIS means inflammation of the sac in which the heart is enclosed. (*See HEART DISEASES.*)

PERINEUM

PERINEUM, or **FORK**, is the region situated between the opening of the bowel behind and of the genital organs in front. In the female it is apt to be lacerated in the act of childbirth, and the defect, if it be not repaired, may lead in later life to prolapse of the womb and various other disturbances.

PERIOD (*see* MENSTRUATION).

PERIOSTEUM is the membrane surrounding a bone.

PERISTALSIS is the term applied to the worm-like movement by which the stomach and bowels propel their contents.

PERITONEUM is the membrane lining the abdominal cavity, and forming a covering for the organs contained in it.

PERITONITIS means inflammation of the peritoneum or membrane lining the abdominal and pelvic cavities. It may exist in an acute or a chronic form, and may be either localised in one part or generally diffused.

Inflammation of this membrane varies much as regards its causes, severity, and danger, according as it is acute or chronic. Though there are occasional intermediate cases, it may be said, roughly speaking, that the development of acute cases may be reckoned by days, that of chronic cases by months.

ACUTE PERITONITIS.—The great danger which follows upon stabs and other penetrating wounds of the abdomen, and the fear which, prior to the days of antiseptic surgery, kept surgeons from operating upon this cavity, originate from the risk of peritonitis. On the other hand, the danger may come from within, and all conditions which lead to perforation of the stomach, bowels, bile-ducts, bladder, and other hollow organs may produce it. Thus gastric ulcer, typhoid fever, gall-stones, rupture of the bladder, strangulated hernia, and obstructions of the bowels may end in peritonitis. Peritonitis may also arise within a few days after delivery,

PERITONITIS

and this 'puerperal' form is a very fatal complication of childbirth.

Symptoms.—The symptoms usually begin by shivering, together with vomiting and pain in the abdomen of a peculiarly severe and sickening character, accompanied with extreme tenderness, so that the slightest pressure causes a great aggravation of suffering. The patient lies on the back with the knees drawn up, and the hands often rest upon the head, and it will be noticed that the breathing is rapid and shallow and performed by movements of the chest only. The abdomen becomes swollen by flatulent distension of the intestines, which increases the patient's distress. There is usually constipation. The skin is hot, and the temperature rises to 104° or 105° Fahr. These symptoms may subside in a day or two, but if they do not, the case is apt to go on rapidly to a fatal termination.

Treatment.—The patient should lie recumbent on the back, with a pillow beneath the knees, so as to bend up the thighs, and a cage over the abdomen to support the weight of the bed-clothes. Externally, either an ice-bag or hot laudanum fomentations retard the inflammation and give relief. The food must be fluid, stimulating, and easily digested. In the later stages, when the stomach will not retain even water, large enemata of saline solution quench the distressing thirst.

The question of operation arises in every case of acute peritonitis.

CHRONIC PERITONITIS is, in the great majority of cases, tubercular in origin and secondary to tuberculous disease of bones, joints, glands, or bowels. There is also a localised form of chronic peritonitis, which is non-tubercular.

Symptoms.—The chief symptoms of tubercular peritonitis are abdominal pain and distension, along with disturbance of the functions of the bowels, there being either constipation or diarrhœa, or each alternately.

PERMANGANATE OF POTASSIUM

Along with these local manifestations, there exist the usual signs of tuberculous disease, viz. fever, with wasting and loss of strength. The abdominal pain may, however, be so slight as only to reach a feeling of uncomfortable weight and fullness.

Treatment.—The same rules, as to diet and a healthy life, that govern the consumptive, apply in tubercular peritonitis. (See CONSUMPTION.) The application of various counter-irritants to the abdomen is practised by some, and the daily rubbing of mercurial ointment into the abdomen has been highly recommended. Ointment containing tuberculin (Moro's ointment) is frequently used. Surgical intervention is often attended by a cure if the case does not recover within some months under this medical treatment.

PERMANGANATE OF POTASSIUM is a crystalline substance of brilliant purple hue. It is a cheap disinfectant, and is most conveniently kept in a saturated solution (1 part of potassium permanganate to 20 parts of water). If this be diluted with water twenty-five times (1 in 500), that is, to a crimson tint, or in the proportion of about a tablespoonful of the strong solution to a tumblerful of water, it forms an excellent lotion for washing ulcers and suppurating wounds, and, diluted to a pale pink colour, makes a good gargle for an ulcerated throat. In the latter strength, it may be poured down drains, when it both purifies them and destroys the smell proceeding from them. A stronger solution (dark crimson or purple in colour) may be used with advantage to wash or steep the hands after they have touched a foul wound or a person suffering from infectious disease. If the hands become brown after its use, this discoloration may be removed by oxalic acid or by lemon juice. As a hair-dye, potassium permanganate gives a rich chestnut-brown colour. A pale pink solution of potassium perman-

PERSPIRATION

ganate is also a delicate test for the purity of drinking-water; a drop or two allowed to fall into a glass of water should tinge the latter pink, but, if the pink colour disappear, it indicates the presence of organic impurities.

PERNICIOUS ANÆMIA is a severe form of bloodlessness also known as ADDISONIAN ANÆMIA. (See ANÆMIA.)

PEROXIDE OF HYDROGEN is a syrupy, colourless, odourless liquid which is most commonly employed as a solution in water of such a strength that any quantity will give off ten times its bulk of oxygen gas; this is known as 10-volume strength, or as liquor of hydrogen peroxide.

Externally to ulcers, and by sprays or swabs to cavities like the nose and throat, the watery solution of hydrogen peroxide is applied in order to act as an antiseptic, and also for the valuable property possessed by the little bubbles of oxygen that it gives off in breaking up and causing the separation of discharges. For this reason it is also used in diphtheritic sore throat and in order to remove surgical dressings that are very adherent. It is also used as a hair-dye, having the power of changing hair to a fair-yellow shade.

PERSPIRATION, or SWEAT, is an excretion from the skin, produced by microscopic sweat-glands scattered over the surface. Perspiration takes place constantly by evaporation from the openings of the sweat-glands, and this 'insensible perspiration' amounts in twenty-four hours to considerably over a pint. Under certain circumstances, as when the skin is heated or the person exerts himself, drops of 'sensible perspiration' appear on the skin; to these the term 'sweat' is generally confined, and the amount of sweat secreted may become very large.

Sweat is a faintly acid, watery fluid containing less than 2 per cent of solids, made up mainly of salts and to a slight extent of fatty material, and including a small amount of urea

PERSPIRATION

(about 1 part per 1000), the substance which the kidneys excrete in large amount. When the action of the kidneys is defective, for example in Bright's disease, urea and other substances, which the kidneys normally excrete, pass out in greater quantities through the skin.

Treatment. — **LESSENED** perspiration is treated when necessary by various drugs known as diaphoretics (*see* **DIAPHORETICS**), and by hot-air baths. (*See* **BATHS, BRIGHT'S DISEASE.**)

EXCESSIVE sweating is diminished by the proper treatment of the disease which causes it. In consumption, the night-sweats are accompanied by a feeling of great weakness, and the clammy garments are a source of great discomfort to the patient till they are removed. Sweating is checked to some extent by sponging the skin with vinegar in water, and by the administration of astringent drugs. Belladonna is a drug which has special power in checking the secretion of sweat, either applied to the skin as the liniment of belladonna or more effectively when the tincture or other preparation is given by the mouth. Both the weakness and the cold sweats of phthisical patients are, however, mainly due to exhaustion of the nervous system, so that stimulating food, such as a bowl of beef-tea at night, helps to lessen both exhaustion and sweating in the early morning.

Sweating of the feet and armpits, which is often offensive, can often be treated by more frequent bathing and care of the digestion. Sponging with peroxide of hydrogen solution, or washing with a mildly antiseptic soap, such as carbolic or coal-tar soap, followed by dusting with boracic powder is helpful. The stockings must be frequently changed and should be disinfected by being wrung out of boracic lotion or perchloride of mercury lotion, which should also be used occasionally to wipe out the interior of the boots.

PHLEBITIS

PERTUSSIS is another name for whooping-cough. (*See* **WHOOPING-COUGH.**)

PERUVIAN BARK is another name for cinchona bark, from which quinine is derived.

PESSARIES are instruments designed to support a displaced womb.

PETIT MAL means the lesser type of epileptic seizure. (*See* **EPILEPSY.**)

PHAGOCYTOSIS is the name applied to a process by which the attacks of bacteria upon the living body are repelled and the bacteria destroyed through the activity of the white corpuscles of the blood.

PHARMACOPŒIA is an official publication dealing with the recognised drugs and giving their doses, preparations, sources, and tests. Most countries have a pharmacopœia of their own.

PHARYNGITIS means inflammation of the pharynx. (*See* **THROAT, DISEASES OF, and CLERGYMAN'S SORE THROAT.**)

PHARYNX is another name for the throat. The term throat is popularly applied to the region about the front of the neck generally, but in its strict sense it means the irregular cavity into which the nose and mouth open above, from which the larynx and gullet open below, and in which the channel for the air and that for the food cross one another.

PHENACETIN is a white crystalline coal-tar product. It is much used in fevers, influenza, headaches, and neuralgias of all kinds, on account of its power of reducing temperature and of deadening pain. It is often given in doses of 5 to 15 grains, along with sodium salicylate and citrate of caffeine. (*See* **ANTIPYRINE.**)

PHENOL is another name for carbolic acid. (*See* **CARBOLIC ACID.**)

PHIMOSIS is the name applied to a condition of great narrowing at the edge of the foreskin, for which the operation of circumcision is necessary.

PHLEBITIS means inflammation of a vein. (*See* **VEINS, DISEASES OF.**)

PHOSPHATES

PHOSPHATES are salts of phosphoric acid, and, as this substance is contained in many articles of food as well as in bone, the nuclei of cells, and the nervous system, phosphates are constantly excreted in the urine. In conditions of debility, phosphates are often taken as tonics.

PHTHISIS means wasting, and is the general term applied to that progressive enfeeblement and loss of weight that arise from tubercular disease of all kinds, but especially from the disease as it affects the lungs. (*See CONSUMPTION.*)

PHYSIOLOGY is the branch of medical science that deals with the healthy functions of different organs, and the changes that the whole body undergoes in the course of its activities.

PICRIC ACID is used for burns or bed sores, strips of gauze saturated in a solution being spread upon the burn, where they quickly dry and are retained in place. This dressing relieves pain, stops suppuration, and leaves a smooth scar.

PILES, or **HÆMORRHOIDS**, consist of a varicose and often inflamed condition of the veins about the lower end of the bowel, known as the 'hæmorrhoidal' veins.

There is always a tendency for the veins in this situation to become distended, and probably most people of middle life are troubled by this condition to some extent, especially men of sedentary habits who indulge in over-eating and are troubled by constipation, as well as women who have borne many children. Habitual constipation is the principal cause of the presence of piles, and sitting on a cold stone or damp seat, or even a general chill, may suffice from time to time to inflame them and bring on what is popularly known as 'an attack of piles'.

Piles come on very frequently during pregnancy, passing off when this condition has terminated. They are very common in heart disease,

PILES

liver complaints, such as cirrhosis or congestion, and any disease affecting the bowels.

Symptoms.—**EXTERNAL PILES** may be present for years and give no trouble whatever, beyond occasioning pain of a cutting or burning character now and then when a very costive motion is passed. When, in consequence of a chill or other cause, they become inflamed, they are very painful and tender from chafing against the thighs and clothing in walking, and from pressure upon the chair on which the person sits. The pile, or piles, in these circumstances become enlarged and red, and give off a thin blood-stained discharge.

INTERNAL PILES may be slight, and may give no sign of their presence beyond occasional bleeding, which may vary from a mere streak, when the bowels are opened, to a discharge of several ounces of dark blood. They are apt to produce a constant discharge of mucus tinged with blood which soils the linen, but unless very severe are not, as a rule, painful. These discharges of blood may, when copious and frequent, cause anæmia and become a serious menace to the health, though they are never fatal. On the other hand, in plethoric overfed people they may be a very salutary thing, warding off gout and apoplexy, or relieving the heart when it is diseased. When internal piles are large they may come down with the movement of the bowels, and may then become inflamed and painful from time to time, just like external piles.

Treatment.—Constipation must, in the first place, be guarded against. While the use of violent and irritating purgatives, like aloes, should be avoided if possible, care must be taken, by regulation of the diet and other means, to secure soft motions. (*See CONSTIPATION.*) The diet should, as a rule, include plenty of fruit, vegetables, and butter, and should in all cases be of a simple nature.

PILLS

Above all articles of food, alcoholic beverages tend to produce and perpetuate piles, and should therefore in bad cases be entirely abandoned. Regular exercise is very necessary in order to carry off the blood to the limbs and so relieve the internal circulation. An occasional dose of some substance that stimulates the liver, such as blue pill, is beneficial.

Locally, great care must be taken not to irritate the piles, and when they are inflamed, they should be washed with water every time the bowels move. Bleeding and the tendency to inflammation may be controlled by applying a sponge full of very hot water. In the case of internal piles, which come down at stool, it is very important that they should be returned within the bowel each time by gentle steady pressure with the fingers. If they are 'down' and inflamed, a hot bath followed by a cocaine and morphia suppository gives relief, as also does an astringent ointment such as that of adrenalin, or that of galls and opium.

Generally these means suffice to keep the piles from causing trouble or to cure them completely, but occasionally surgical means are had recourse to. Small masses of piles are sometimes caused to shrivel up painlessly by injections through a hypodermic needle.

PILLS are small round masses containing active drugs held together by syrup, gum, glycerin, or adhesive vegetable extracts. The majority of pills have a purgative action. They are sometimes without coating, being merely rolled in French chalk, but often they are covered with sugar, gelatin, or gilt.

If difficulty be found in swallowing a small pill, it may be put in the middle of a large bolus of bread-crumbs, or it may be taken with a gulp of water.

Some of the best-known pills are *Addison's pill*, containing calomel, digitalis, and squills; *Anderson's pill*, or *compound gamboge pill*; *Blaud's*

PLAGUE

pill, containing carbonate of iron; *blue pill*, or mercury pill; *Guy's pill*, containing digitalis leaf, squill, extract of henbane, and blue pill; *Hamilton's pill*, or *pill of colocynth and hyoscyamus*; *vegetable laxative pill*, containing colocynth, jalap, hyoscyamus, leptandra, and podophyllin; and '*No. 9 pill*', containing calomel, compound rhubarb pill, and compound colocynth pill.

PIMPLES, technically known as papules, are small, raised, and inflamed areas on the skin. On the face the most common cause is acne. (See ACNE.) Boils commence as hard pimples. (See BOILS.)

PINE OIL is a nearly colourless oil with aromatic odour, distilled from the fresh needles of the Scotch fir. Its action is similar to that of turpentine, and it is mainly used as an inhalation, prepared by adding a few drops to hot water.

PITUITARY BODY is a small structure about the size of a pea, attached to the base of the brain. An extract of this gland is manufactured from the pituitary glands of animals and is sold under various names, *e.g.* pituitrin, pitibulin, hypophisin, pituglandol, infundin, etc. It is usually of 10 per cent strength. As a result of injecting this, the blood-pressure is raised, the secretion of urine is increased, the movements of the intestine are strengthened and quickened, and the contractions of the uterus during labour are greatly increased. It is therefore used in cases where collapse is associated with low blood-pressure, also in cases where obstruction of the bowels from sluggish intestinal action threatens, and especially to increase the contraction of the uterus so as to shorten the duration of labour and prevent bleeding after childbirth.

PLACENTA is the technical name for the afterbirth. (See LABOUR.)

PLAGUE, or BUBONIC PLAGUE, is the name of an infectious epidemic disease common to man and many of the lower animals. Its main char-

PLASTERS

acters are fever, swelling of the lymphatic glands, a rapid course, and a very high mortality, which has made it a much-dreaded scourge. In the Middle Ages it was known as the **BLACK DEATH**, which again and again ravaged Europe, though for the past century it has been almost confined to warm climates.

PLASTERS.—These are made by spreading upon cotton cloth, linen, or leather some sticky substance containing drugs of various sorts. The sticky material, which may consist either of resin, beeswax, pitch, or lead-soap (diachylon), or generally of two of these mixed, becomes more adhesive by the action of gentle heat. Rubber plasters which are highly adhesive are also obtainable usually in a long strip on a spool. 'Court plaster' is a thin silk tissue.

Uses.—Plasters are generally useful on account of their power of gripping a part and exerting steady pressure on it. In cases where a part is weak, such as the muscles of the back after a slight injury, a large plaster, 8 inches by 12, gives great support; ordinary lead or resin plaster, or iron plaster, is much used in this way, and may be worn for a fortnight or so till the plaster wrinkles up and gets loose. Such large plasters are spread on leather or strong linen and have numerous holes for evaporation of moisture (porous plaster). Belladonna plaster is used for soothing pain, as in rheumatism, chronic inflammation of the breast, and neuralgia. In the various pains following twists and bruises plasters are extremely useful. To support a sprained joint, *e.g.* the ankle, a plaster is often applied in overlapping strips passing round the leg and instep. Cantharides plaster is used as a counter-irritant by its blistering action. Capsicum plaster is used as a milder form of counter-irritant. Menthol plaster is applied to soothe headache and other pains. Plasters of felt are employed to protect corns, bunions, and

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small sores from abrasion; and 'corn plasters', containing salicylic acid in various strengths, are used to soften and remove corns.

Mode of application.—Most plasters with a rubber basis stick by simply laying the plaster with the adhesive side next the skin, but the cheaper plasters must be warmed, which can be done either by holding the plaster before a fire, or better by holding it against a jug full of hot water, with the cloth side next the jug. If the plaster be wide, or the surface to be covered be rounded, it is necessary to cut deep notches into the plaster before heating, and the edges so formed are allowed to overlap or separate. In applying a plaster for support to the back, the person must bend backwards as far as possible; then when he tends to stoop forwards the plaster is a real support. On the other hand, in applying it for support to the breast, the breast must be lifted as high as possible, and the skin which the plaster is to cover stretched, slits having been cut in the plaster beforehand. Plaster strips used to support the ankle or leg should be applied firmly like a bandage for the part.

PLATING is a term applied in surgery to the method of securing union of fractured bones by screwing to the sides of the fragments narrow metal plates, which hold them firmly together whilst union is taking place.

PLEURA, or **PLEURAL MEMBRANE**, is the name of the membrane which, on either side of the chest, forms a covering for one lung.

PLEURISY, or **PLEURITIS**, means inflammation of the pleura or serous membrane investing the lung and lining the inner surface of the ribs. It is a common form of chest complaint, and may be either acute or chronic, the latter being usually tuberculous in origin.

Pleurisy frequently arises from exposure to cold, being then probably of rheumatic nature; hence it is more common in the colder weather; but

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besides this, various other causes may produce it. Thus it is often associated with other forms of inflammatory disease within the chest, more particularly pneumonia. The connection of pleurisy with consumption is now recognised as a most important one. Very often it happens that an attack of pleurisy, which apparently has passed off, returns and is eventually followed by consumption, it may be after several years.

Symptoms.—**DRY PLEURISY.**—In the case of dry pleurisy, which is, on the whole, the milder form, the chief symptom is a sharp pain in the side, felt especially in breathing. Fever may or may not be present. There is slight dry cough; the breathing is quicker than natural, and is shallow and of catching character.

PLEURISY WITH EFFUSION is usually more severe than dry pleurisy, and, although it may in some cases develop insidiously, it is in general ushered in sharply by shivering and fever, like other acute inflammatory diseases. The pain is greatest at the outset, and tends to abate as the effusion takes place. A dry cough is almost always present, which is particularly distressing, owing to the increased pain the effort excites. The breathing is difficult, tending to become shorter and shallower as the disease advances, and the lung on the affected side becomes compressed. The patient at first lies most easily on the sound side, but as the effusion increases he finds his most comfortable position on his back or on the affected side.

Acute pleurisy is often merely an accompaniment of the severer condition of lobar pneumonia, the disease really being a *pleuro-pneumonia*.

Treatment.—The treatment varies greatly with the form and severity of the attack. In the early inflammatory stage, one of the chief symptoms calling for treatment is the pain, which may be soothed by application to the chest of hot poultices or fomentations. Instead of these, an ice-

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bag is often applied to the side, and this has the effect of almost immediately soothing the acute pain. Another plan consists in the fixing, as far as possible, of one side of the chest by means of overlapping cross strips of adhesive plaster.

Cases of simple dry pleurisy usually soon yield to such treatment, aided, if need be, by the application of blisters or iodine to the chest as the condition is subsiding.

In the case of pleurisy with effusion, in addition to these measures, blistering and the internal use of saline purgatives and diuretics appear to be often of service in diminishing the amount of the fluid in the pleural cavity. In cases of extensive accumulation, when other means fail to reduce or remove the fluid in a short time, the only hope of preventing such compression of the lung as will impair its function lies in the performance of aspiration to draw off the fluid.

The convalescence from pleurisy requires special care, and the expansion of the lung may be assisted by suitable breathing exercises (*see CHEST DEVELOPMENT*), or by connecting two wash-bottles in such a way that a quantity of fluid can be blown over from one to the other repeatedly. The latter exercise is graduated by blowing the fluid from one bottle to the other an increasing number of times on each successive day.

PLEURO-PNEUMONIA means a combination of pleurisy with pneumonia.

PNEUMONIA, or inflammation of the substance of the lungs, manifests itself in several forms which differ from each other in their nature, causes, and results, viz.: (1) *acute lobar* or *croupous pneumonia*; (2) *catarrhal pneumonia*, *broncho-pneumonia*, or *lobular pneumonia*, which occurs as a result of bronchitis; (3) *interstitial pneumonia*, a more chronic form of inflammation, which affects chiefly the framework or fibrous

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tissue of the lung and is closely allied to phthisis.

ACUTE LOBAR PNEUMONIA is commonly limited to a portion of one lung, the commonest part being the lower lobe on one or other side. The inflamed area is sharply marked off by the deep fissure of the lung, which prevents spread of the disease to the other lobe. Occasionally the pneumonia spreads throughout the whole of one lung, or it may affect both lungs, when it is called *double pneumonia* and is a serious and often fatal condition. The apex of the lung is sometimes the only part affected (*apical pneumonia*), and this type seems especially to affect drunkards, in whom pneumonia is a very fatal malady. The right lung is considerably more frequently affected by pneumonia than the left lung.

Exposure to cold or wet seems to be generally the exciting cause of an attack of pneumonia, though other conditions are of great importance (see LUNGS, DISEASES OF). Often the person affected is run down in health, fatigued, or mentally depressed, although the disease, particularly when associated with influenza, frequently attacks the most robust people with rapidly fatal effect.

The disease may occur at any age, but is most common during the active years of life from 20 to 50. Among the aged, the other type of pneumonia, *broncho-pneumonia*, is much more common. During the prime of life the disease affects men much more commonly than women, probably in consequence of their greater exposure at work.

Symptoms.—The symptoms of acute lobar pneumonia are generally well marked from the beginning. After an incubation period of two to six days, the attack usually commences with shivering (or in young children with a convulsion), and this is speedily followed by pain in the chest and sometimes by vomiting. The temperature almost at once rises to 101°

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or even 104° F., the pulse is quickened, and the breathing is rapid, shallow, and sometimes laboured. Occasionally the development is less abrupt, and the patient, although not feeling well, may remain at work for two or three days after the onset. The lips are dark and the face has a dusky flush. Cough is an early symptom, at first frequent, hacking, and accompanied by only a little clear, tough expectoration, but later bringing up a copious, rusty-brown material which is generally very tenacious, sticking to the sputum-dish even when the latter is turned upside down ('rusty sputum'). Occasionally the expectoration contains bright red blood, and this is by no means a bad sign. The temperature may abate a little after the initial rise, but usually continues between 103° and 105° for about a week, when it falls with considerable suddenness (crisis) to normal. The crisis generally takes place between the seventh and tenth day of the illness, most commonly about the eighth. After a sudden fall there is usually a slight reactionary rise to 99° or 100°, but the normal level in favourable cases is afterwards maintained. In occasional cases the temperature falls more slowly and takes two or three days gradually to subside to normal. The pulse rate remains quick so long as the temperature is elevated, but it should fall proportionally to the temperature at the time of crisis. The respiration rate, which is during the course of the illness quickened out of proportion to the pulse, shows almost corresponding diminution after the time of crisis.

In unfavourable cases, death may take place either from the extent of the inflammation, especially if the pneumonia is double, from exhaustion due to excessive fever, sleeplessness, and similar causes, or from failure of the heart's action in cases where a great amount of general poisoning is present.

Some of the unfavourable signs are

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extremely rapid and shallow breathing with accompanying lividity, delirium of wildly excited type in which the patient becomes excited by struggling, persisting sleeplessness, a rapid and feeble pulse indicating impending heart-failure, excessive sweating, and the occurrence of complications such as pericarditis. Death may also take place at a later stage from the development of empyema, abscess, or gangrene of the lung. In a small number of cases, recovery may be imperfect, the disease gradually passing into a chronic interstitial pneumonia.

Treatment.—Treatment in acute pneumonia has undergone great changes with the course of time. Sixty to eighty years ago blood-letting was a general procedure and the whole treatment was conducted on lowering, or as it was then called 'anti-phlogistic' principles. It was shown that, while this form of treatment was satisfactory in some cases, many patients were prejudicially affected. Now, it is generally held that in ordinary cases, which include the great majority of all cases of this disease, very little active interference is required, the disease tending to run its course as a fever, and requiring the attention of a good nurse rather than the physician's skill.

Pain and difficulty of breathing may be relieved by the application of hot fomentations, poultices, or ice-bags to the affected side. Any tendency to excessive fever may often be held in check by quinine and other antipyretic drugs, or more effectively by sponging with tepid water. Cases in which the disease is extensive in the lungs or in which the heart is feeble and the blood in consequence not properly oxygenated, as shown by blueness of the face and lips, obtain great relief and benefit from the inhalation of oxygen. As regards feeding, the digestive powers being much reduced, the patient should be fed with milk, soups, and other light forms of nourishment frequently administered. In

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the later period of the disease, stimulants may be required either in the form of spirits, champagne, or other forms of alcohol, or it may be necessary to administer cardiac stimulants such as digitalis, respiratory stimulants such as strychnine, or preparations which raise the blood-pressure such as pituitrin. Sleeplessness is sometimes relieved by sponging the body with tepid water, but, if more troublesome, it generally yields to the administration of paraldehyde or chloral. Several anti-pneumococcal sera have been introduced and tried.

After the acute symptoms disappear the patient must remain in bed for some time, not sitting up before at least ten days have elapsed after the crisis and not going about until a convalescence of three weeks has taken place. Counter-irritation of the chest by tincture of iodine is often employed to promote the absorption of the inflammatory products in the lung. The occurrence of empyema, which, when it takes place, is indicated by hectic rise of temperature every day, sometimes follows or prevents the crisis and requires aspiration or surgical drainage of the pleural cavity. After recovery is complete, the health for some time should be watched with great care because a recurrence of acute pneumonia is liable to take place.

BRONCHO - PNEUMONIA differs from acute lobar pneumonia in several important points. In the former, inflammation is more diffuse, and tends to affect small patches or lobules of lung tissue here and there, rather than one or more lobes. It occurs most frequently in children, often following upon some previous acute illness in which the bronchi are inflamed, such as measles or whooping-cough. It also tends particularly to affect old people as the result of bronchitis, and it forms one of the chief causes of death among the aged. (*See BRONCHITIS.*)

Symptoms.—The symptoms of broncho-pneumonia in its more acute

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form are the occurrence, during an attack of bronchitis, of a sudden and marked rising of temperature together with quickened pulse and increased difficulty of breathing. The cough becomes short and painful unless the child or aged person is too feeble to bring up expectoration, when the cough becomes of a suffocative type, which forms a very bad sign. Vomiting sometimes occurs in children and is a good symptom because it aids in freeing the lungs from the accumulating secretion. In a marked case of broncho-pneumonia the dusky red colour of the lips, cheeks, and ears is also present as noticed in acute lobar pneumonia, due to defective oxygenation of the blood.

The illness does not end by a crisis as in the case of lobar pneumonia, but the temperature tends for an indefinite period, it may be of several weeks, to fall and rise again with a gradual fall to normal.

Broncho-pneumonia must be regarded as a condition of serious import. It is apt to run rapidly to a fatal termination in weakly persons, the inflammation spreading and the lungs filling up with secretion. After its occurrence there is a considerable tendency to the development of interstitial pneumonia or of tuberculosis. On the other hand, a favourable result is frequent if the condition is recognised in time to admit of efficient treatment.

Treatment.—The treatment is essentially that for the more severe forms of bronchitis (*see* BRONCHITIS), where in addition to expectorants intended to help the freeing of the chest from secretion, various stimulants and good nourishment are of great importance. The administration of ipecacuanha wine in large doses, sufficient to cause the patient to vomit, often produces marked benefit by freeing the chest from its load of accumulated secretion in cases where coughing is difficult. The admission of fresh air in broncho-pneumonia

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following whooping-cough, measles, and similar diseases is of great importance, the patient at the same time being protected by light warm applications, such as a gamgee-tissue jacket on the front and back of the chest. Administration of oxygen is of great value in cases showing duski-ness of the lips and face. Steam inhalations also often give much relief. The posture of the patient in bed is a matter of importance; whilst in the case of lobar pneumonia the patient obtains most relief from lying on his back or on the affected side, in broncho-pneumonia with an excessive amount of secretion the patient is usually most comfortable and breathes most easily when kept constantly in a half-sitting posture with the shoulders raised high by pillows placed behind the back.

Convalescence is often prolonged, and special care is required in the case of children, in view of the tendency of the disease to be followed by tuberculosis.

CHRONIC INTERSTITIAL PNEUMONIA is a slow inflammatory change affecting chiefly one portion of the lung texture, viz. its fibrous framework. It is sometimes the result of one of the acute forms of pneumonia, which has not cleared up properly; it also comes on in stone-cutters, potters, knife-grinders, and other workers in an atmosphere containing gritty dust.

Symptoms are very similar to those of chronic phthisis (*see* CONSUMPTION), and treatment is conducted on similar principles.

PNEUMOTHORAX means a collection of air in the pleural cavity, into which it has gained entrance by a wound in the lung or in the chest-wall. When air enters the chest the lung immediately collapses towards the centre of the chest, but air being very quickly absorbed from the pleural cavity, the lung expands again in a short time. (*See* LUNGS, DISEASES OF.)

Artificial pneumothorax is an opera-

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tion by which in a case of plithisis air may be pumped into the pleural cavity so as to cause collapse of one lung, which rests it and allows cavities in it to heal up.

POISONS.—A poison is any substance or matter (solid, liquid, or gaseous) which, when applied to the body outwardly, or in any way introduced into it, can destroy life by its own inherent qualities, without acting

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mechanically, and irrespective of temperature.

Varieties.—Many substances, which are poisonous, are valuable remedies when used in small quantities or properly applied externally. Others are common household substances or garden plants, and very many have important uses in the arts. Under the heading of poisons must be included bacteria and the harmful sub-

TABLE OF COMMON POISONS AND THEIR TREATMENT

Poison	Treatment	Poison	Treatment
ACIDS— Hydrochloric Nitric Sulphuric	Give lime-water, magnesia, chalk, whitening, or bicarbonate of soda in water; then albumin water, oil, or barley water.	DIGITALIS (foxglove)	Give emetics; wash out stomach with permanganate of potassium.
ACONITE . .	Lay patient down; give stimulants and digitalis; wash out stomach with permanganate of potassium.	ETHER . .	Wash out stomach; cold douches.
ALCOHOL . .	Wash out stomach; cold douches; give apomorphine.	IODINE . .	Give flour or other form of starch in water; wash out stomach.
ALKALIES— Caustic soda Caustic potash Ammonia	Give vinegar in water; then linseed or olive oil.	LEAD ACETATE (sugar of lead)	Give magnesium sulphate or Glauber's salt; wash out stomach; then give albumin water or barley water.
ARSENIC . .	Give emetic; then magnesia or hydrated oxide of iron, prepared by mixing solution of perchloride of iron with solution of ammonia in equal parts, straining through a handkerchief, and stirring up the precipitate in water; then albumin water or barley water; wash out stomach and give laudanum.	LAUDANUM— Morphine Opium, etc.	Give emetic; wash out stomach with permanganate of potassium; give strong coffee; keep patient awake; artificial respiration.
BELLADONNA and atropine	Give emetic; wash out stomach with permanganate of potassium; morphine or pilocarpine as antidote; artificial respiration.	LYSOL . .	(See CARBOLIC ACID above.)
CAMPHOR . .	Give emetic, then a stimulant.	MUSHROOMS— Fungi	Give emetic; hypodermic injections of atropine and strychnine.
CARBOLIC ACID, CRESOL, LYSOL, etc.	Give magnesium sulphate or Glauber's salt, then albumin water or milk; wash out stomach.	OXALIC ACID and binoxalate of potassium (salts of sorrel)	Give magnesia, chalk, or whitening (<i>not</i> bicarbonate nor carbonate of soda); wash out stomach; give albumin water or milk.
CHLORAL . .	Give emetic, then strychnine and stimulants; artificial respiration.	PHOSPHORUS (matches, etc.)	Give sulphate of copper as emetic; wash out stomach with potassium permanganate; give albumin water; avoid oils.
COCAINE . .	Give stimulants; amyl nitrite as antidote; artificial respiration.	PTOMAINES (bad meat)	Give emetic at once, or later castor oil; brandy.
CORROSIVE SUB- LIMATE (mercuric chloride)	Give albumin water or milk; wash out stomach.	SILVER NITRATE (lunar caustic)	Give salt in water; wash out stomach; give albumin water or milk.
CYANIDE OF POTASSIUM and prussic acid	Hot and cold sponges to heart; ammonia by inhalation; artificial respiration.	STRYCHNINE . .	Wash out stomach with permanganate of potassium; give chloral.
		TOBACCO . .	Give strong coffee or strychnine.
		TURPENTINE . .	Give emetics, then magnesium sulphate and albumin water or milk.
		ZINC CHLORIDE	Wash out stomach; then give albumin water or milk.

POISONS

stances which their growth produces, such as the poisons found in decomposing meat. (See PTOMAIN POISONING.) The injuries inflicted by insects, snakes, and other animals which introduce some poison into the body are considered under BITES.

A practical arrangement is made, according to the mode of action, into :

Corrosives, which burn and destroy the parts with which they come in contact.

Irritants, which have generally an irritant action upon the stomach and bowels.

Narcotics, which affect the brain and spinal cord, causing a stuporous state.

Narcotico-irritants, which produce first of all an irritative effect upon the stomach or upon the nervous system, and finally act as narcotics.

Symptoms.—The symptoms of poisoning, which come on soon after a meal, or at least after some substance has been swallowed, are of great importance, because the treatment varies according to the type of poison taken, as shown by the symptoms.

CORROSIVE POISONS produce immediate pain and swelling of the lips, mouth, and throat, which also show signs of discoloration, depending on the poison taken. If the dose be large, there may be speedy collapse and death.

IRRITANT POISONS produce vomiting, purging, and abdominal pain. In the case of the milder irritants, the results may be deferred for a few hours, particularly when a full meal has been taken along with the poison. Later, in very serious cases, collapse and insensibility come on.

NARCOTICS produce giddiness, headache, interference with sight, stupor, preceded occasionally by convulsions, followed by deepening insensibility ending in coma and death. No pain is produced by these.

NARCOTICO-IRRITANTS produce at first the symptoms of the irritant poisons, vomiting, abdominal pain, and in many cases purging. Later,

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delirium or convulsions appear, ending in stupor and death.

Treatment.—When a CORROSIVE POISON has been taken, one should first of all administer the chemical antidote to the poison, if there be one ; and thereafter soothing substances should be given to allay the irritation in the mouth, throat, and stomach. The following corrosive poisons have such chemical antidotes. When acids have been taken, give a dilute alkali, such as lime-water, magnesia, chalk, whitening, or even plaster scraped from the walls and mixed with water. When caustic alkalies have been taken, give weak acids, such as copious draughts of vinegar in water or lemon juice in water. When corrosive sublimate is the poison, white of egg in water or milk combines with it to form a harmless substance.

After the poison has been neutralised, milk, white of egg in water, or other bland fluid may be given to mitigate the irritation it has caused.

In the case of the IRRITANT POISONS, draughts of water or milk to dilute the poison, together with an emetic consisting of a tablespoonful of mustard in water, or of 20 grains of sulphate of zinc in water, should be given as soon as possible. Still better is it to wash out the stomach with the stomach tube at the earliest possible moment.

The following irritant poisons have chemical antidotes, which may be given before the stomach is emptied. When oxalic acid or salts of sorrel has been taken, give chalk or magnesia, which forms in the stomach the harmless oxalate of lime. If lunar caustic should have been swallowed, common salt in water neutralises it by forming the inert chloride of silver. When sugar of lead has been swallowed, Epsom salts is an efficient antidote, producing the insoluble sulphate of lead in the stomach. Carbolic acid also has for an antidote Epsom salts. Arsenic is neutralised by a solution of hydrated peroxide of iron, when this is obtainable.

POLIOMYELITIS

In the case of NARCOTIC AND NARCOTICO-IRRITANT poisons, an emetic administered at once is beneficial, and it is the usual practice for a medical man to wash out the stomach with a weak solution of permanganate of potassium, when he sees the case. Permanganate of potassium has the power of destroying many of these vegetable poisons which are of an alkaloidal nature. Many of these poisons, whose deadliness depends upon active principles, can be neutralised to some extent by other drugs.

WHEN THE POISON IS UNKNOWN, but the fact of poisoning suspected, the safest course is to administer tepid water and with it mustard, sulphate of zinc, or other emetic (*see* EMETICS), in order to expel the contents of the stomach, thereafter administering a drink of milk. Above all things is it necessary to keep all vomited matters and the remains of food that the poisoned person has been taking till the arrival of a medical man.

POLIOMYELITIS is the name given to the inflammatory change which takes place in the grey matter of the spinal cord, and leads to the disease known as infantile paralysis. (*See* PARALYSIS.)

POLYPUS is a general name applied to tumors which are attached by a stalk to the surface from which they spring. The term refers only to the shape of the growth and has nothing to do with its structure or nature. Most polypi are of a simple nature, though malignant polypi are also found.

PORTAL VEIN is the vein which carries to the liver blood that has been circulating in many of the abdominal organs.

POTASH, or **POTASSA**, is the popular name for potassium carbonate. Hydrated oxide of potassium is usually known as caustic potash, and its solution as liquor potassæ.

POTASSIUM is a metal which, on account of its great affinity for other substances, is not found in a pure

POULTICES

state in nature. Its salts are used to a great extent in medicine. For the uses of potassium bromide *see* BROMIDES, for those of potassium permanganate *see* PERMANGANATE OF POTASSIUM, for those of the bicarbonate, citrate, and tartrate of potassium *see* CITRIC ACID.

POTT'S DISEASE is a name frequently applied to the angular curvature of the spine which results from tubercular disease. (*See* SPINAL DISEASES.)

POTT'S FRACTURE is a fracture near the lower end of the fibula. (*See* FRACTURES.) It is very often mistaken for a simple sprain of the ankle.

POULTICES (*see also* FOMENTATIONS) are soft moist applications to the surface of the body, generally used hot. They soften the parts with which they come in contact, soothe irritated nerve-endings, relax spasmodically contracted muscle-fibres, and, after being applied for some time, dilate the vessels of the part they cover and increase the circulation through it. These applications are consequently used in all stages of inflammation to soothe pain and promote resolution, or in the late stages, when pus is forming, to aid the rapid formation of an abscess. (*See* ABSCESS.)

Poultices should on no account be applied to open wounds, for their warmth and moisture greatly favour the growth of bacteria.

Method of application.—**LINSEED POULTICE** should be made of freshly crushed linseed, as the meal soon grows rancid if kept. About half a pint of boiling water is poured into a small basin, which has already been warmed, and the linseed is slowly added to it, stirring all the while. Enough meal (about 4 ounces) is added to make a mass sufficiently thick to adhere together, and still soft enough to spread. This may be judged by the mass being sufficiently stiff to allow a spoon or spatula to stand upright in it. A linen, or better a flannel,

POULTICES

rag is laid by the basin and the hot linseed quickly spread on it with a spatula or table-knife. It may be covered with a piece of thin muslin, or the linseed may be applied directly to the skin. On the outer surface of the poultice a piece of macintosh or oil-silk should be placed, and outside of this a thick piece of cotton-wool to retain the warmth. The whole is fixed in place by a flannel bandage or binder. Such poultices become cold in two hours or more and should then be renewed, but the cold poultice should not be taken off till the new one is ready to lay on. Great care should be taken in changing the poultice that the patient is not exposed to chill.

MUSTARD POULTICE is made by mixing $2\frac{1}{2}$ ounces of linseed with half a pint of boiling water as above, adding to it $2\frac{1}{2}$ ounces of mustard flour which has already been mixed with lukewarm water, and stirring the two together. This poultice mass is spread and applied in the same way as the linseed poultice, but must not be left on longer than twenty minutes to half an hour. There must be a piece of muslin upon the surface in order to keep the mustard from adhering to the skin. The patient's sensations form the best guide as to the length of time over which such a poultice should be left on. The place of this poultice is now to a great extent taken by mustard leaves, which simply require to be wetted and applied.

BREAD POULTICE is made by breaking up stale bread in a basin, pouring boiling water over the crumbs sufficient to soak them, allowing to cool, draining off superfluous moisture, spreading on a cloth, and covering with muslin.

STARCH POULTICE.—Add a teaspoonful of powdered boric acid to four tablespoonfuls of cold-water starch, mix with a little cold water, then pour in a pint of boiling water, and stir till thickened; let stand till cold; spread the cold starch *thickly*

PREGNANCY, PECULIARITIES OF

on pieces of cotton, cover with muslin, and apply to the part, changing the poultices every few hours and wiping the skin gently each time the poultices are re-applied.

CHARCOAL POULTICE is made by preparing a bread poultice as above. It is squeezed as dry as convenient after adding a quarter of an ounce of powdered wood charcoal, and another quarter ounce of dry powdered charcoal is sprinkled on the surface just before it is applied.

POWDERS form the simplest method in which drugs are prescribed. The dose of a powder is usually somewhere between 5 and 60 grains, very powerful drugs being made up with inert substances like sugar, gum, or ginger in order to give them sufficient bulk. The best-known powders are Dover's powder (compound ipecacuanha powder), Gregory's powder (compound rhubarb powder), grey powder (mercury with chalk), James's powder (antimonial powder), and Seidlitz powder (effervescent tartarated soda powder).

Method of use.—If the powder be small and tasteless, a little water is poured out into a teaspoon, the powder shaken out on the surface of the water and swallowed. If it be large and nauseous, the best plan is to envelop it in a rice-paper. A little water is placed in the bottom of a saucer and the circular rice-paper laid upon it, when it quickly softens. The powder is shaken out upon the centre of the rice-paper, and the edges of the latter are quickly turned over it with a teaspoon. The soft mass is then pushed on to the spoon and is easily swallowed, being thus untasted.

PREGNANCY, PECULIARITIES OF.—This state is a natural one, although it sets up great changes, not only in the womb, but throughout the whole body. Most of these changes subside quickly after delivery is accomplished, and though a few minor alterations persist throughout life, the mother returns to her normal

PREGNANCY, PECULIARITIES OF

state within about one month after the child is born.

Duration of pregnancy.—It is generally accepted that pregnancy lasts about 273 days from the end of the last menstrual period. The actual date can be estimated roughly by adding seven days and then counting forwards nine calendar months; for example, supposing the last menstrual period began on 3rd October, adding seven days makes the 10th October, and nine months forwards from this gives the date of probable confinement as the 10th of July. It is usual to say that this day is the middle of the week in which the confinement may be expected.

Signs of pregnancy.—(a) The stoppage of the menstrual flow is the sign which first attracts attention. This symptom may, however, be due to many other causes, such as bloodlessness (*see* MENSTRUATION), but if it occurs quite suddenly it may usually be counted upon as an important sign. It is a popular mistake to suppose that pregnancy cannot occur in a woman while she is suckling a previous child, for this does occur even while the menses are in abeyance. (b) Swelling of the breasts is another important sign, appearing even in the second or third month of pregnancy. A thin fluid, known as colostrum, can, even at this early stage, be pressed from the nipples. At the same time the veins on the breasts become enlarged and visible, and the pigmented ring round the nipple (areola) becomes much darker than before, as well as showing small nodules (Montgomery's tubercles) round its edge. (c) Sickness in the mornings immediately on rising is also a very frequent sign, occurring in about two-thirds of all women, though it may be absent, and even if present may be due simply to dyspepsia and weakness. When the sickness is marked it is, however, a valuable sign, because it appears very early in the course of pregnancy, during the second month, and lasts usually about

PREGNANCY, PECULIARITIES OF

a couple of months. (d) 'Quickening', or the fluttering sensation felt by the mother in consequence of the child's rapid movements, is a very important sign, though it does not usually occur till some time during the fifth month of pregnancy or even later. It is the first sign of life felt by the mother, though it is a popular error to suppose that the child only then begins to live. (e) Enlargement of the abdomen is a pronounced sign, though for the first three months the enlargement is not apparent. It must not be forgotten, however, that enlargement may be due to other causes, such as tumors, dropsy, and even constipation or increasing development of fat. It is not an uncommon mistake for an elderly childless woman to delude herself with the hope that she is about to bear a child, when the abdomen is enlarging simply for the last-named reason. (f) The only absolutely certain sign of pregnancy is obtained when the medical attendant hears the beating of the foetal heart by auscultation over the lower part of the abdomen. The heart-sounds are rapid, much resembling the ticking of a watch, and are heard in general from the middle of the fifth month onwards. (g) There are various minor signs which are sometimes present, sometimes absent, some of which are noticeable by the mother, others appreciable only by the medical attendant. Such are the occurrence of varicose veins, mucous discharge from the vagina, changes in the neck of the womb, etc.

Hygiene of pregnancy.—It is unnecessary for a healthy woman to make any great change in her ordinary mode of life during pregnancy. Her diet must be good, but should be simple and moderate. Alcoholic liquors should in all cases be abandoned during pregnancy. 'Longings' for particular, and often unusual, articles of diet are very frequently felt by the mother, and may be indulged if the craving be not after ex-

PREGNANCY, PECULIARITIES OF

traordinary and hurtful things. The secretions should be kept in good order. Thus constipation should be avoided by a suitable diet containing vegetables, fruit, and the like, or by mild aperients such as rhubarb powder or castor oil if necessary. The skin should be kept in good condition by regular bathing. Moderate exercise should be taken every day on foot or in a car, and very late hours, particularly in a hot foul atmosphere, such as that of a theatre, should be avoided. The dress should be easy, and it is often advisable for women who have borne several children previously to wear a binder or special belt.

Special ailments.—The misfortune which specially attaches to the condition of pregnancy is miscarriage (*see* MISCARRIAGE), which is not, however, liable to occur in perfectly healthy persons. Digestive disturbances are particularly common. Thus the natural morning sickness may become very troublesome, or even dangerous, and require special treatment. Constipation or diarrhœa is often a trouble, but either of them is treated much as under ordinary circumstances. Toothache is a very common complaint, but it is generally a mistake to have a painful tooth pulled during the course of pregnancy, because the pain in many instances is only made worse thereby. Varicose veins in the legs, piles, swelling of the feet, and cramps in the legs are all liable to be caused in the later months by pressure of the increasing womb upon the large vessels and nerves within the pelvis. These, however, are not bad signs, and must simply be tolerated till after the child is born, when they quickly improve. Varicose veins, if very severe, should be supported by elastic stockings or by bandaging the legs, and cramps may be relieved by the usual means. (*See* CRAMP.) Irritability of the bladder, showing itself by frequency of making water, is also a temporary inconvenience similarly due to pressure.

PROGNOSIS

More serious symptoms occasionally arise, such as those of kidney disease, various nervous disorders, and especially the condition known as eclampsia, in which convulsions come on. Displacements of the womb, which have existed prior to pregnancy, may also give trouble if attention be not paid to them, and it may be necessary for the subject of such displacements to wear a pessary during the earlier months.

PREMATURE BIRTH (*see* MISCARRIAGE).

PRESBYOPIA is the general term used to indicate the changes that take place naturally in the eye with the advance of age, and quite apart from any disease, so that it becomes increasingly difficult to use the eyes for near work. (*See* SPECTACLES.)

PRESCRIPTION means the written direction given by the doctor to the chemist for the compounding of medicine suitable to a patient's case. The prescription contains as a rule the names of some preparations from the pharmacopœia, a list of approved remedies published by the government of each country. Sometimes the prescription consists of only one such formula, or it may contain the names of proprietary medicines or of simple substances not included in this official list.

For chemical and physiological reasons as well as for convenience, drugs are administered in a more or less dilute form so calculated that the amount to be taken can be measured by some domestic utensil. Thus :

A drop (roughly)	= 1 minim (℥i.)
A teaspoonful	= 1 fluid dram (℥i.)
A dessertspoonful	= 2 fluid drams (℥ii.)
A tablespoonful	= 4 fluid drams (℥iv.) or (small) ½ ounce (℥ss.)
A wineglassful	= 2½ fluid ounces (℥ii.ss.)
A tumblerful	= 10 fluid ounces (℥x.)

PROGNOSIS is the term applied to a forecast as to the probable result of an attack of disease, particularly with regard to the prospect of recovery,

PROLAPSE

based upon the nature and symptoms of the case.

PROLAPSE means slipping down of some organ or structure. The term is applied chiefly to downward displacements of the rectum and womb. When the lower end of the bowel prolapses each time the bowels move—a fairly frequent occurrence in children,—it should be carefully sponged with cold water, replaced, and, if necessary, retained in place by a soft pad and bandage attached to a waist-belt. The condition tends to pass off as the child grows older.

Prolapse which affects the womb may, in the earlier stages, cause protrusion of a fold of the bowel or bladder through the vagina, and in the later stages the womb itself may protrude to the exterior. The condition, which affects elderly women, is mainly due to injuries caused by childbirth. It may often be remedied by wearing a suitably shaped pessary, or by an operation designed to unite the torn parts.

PROSTATE GLAND is a structure which lies at the neck of the bladder in men and surrounds that part of the urethra lying within the pelvis. This gland is of importance, especially because in late life it is apt to increase in size and change in shape in such a way as to obstruct the exit of water from the bladder. Accordingly, great difficulty in making water occurs, and the regular use of a catheter to draw it off may become a necessity. (See **CATHETERS**.) Inflammation of the bladder is very apt to be finally produced if great care be not taken in the purification and use of this instrument. (See **BLADDER, DISEASES OF**.) When the gland increases thus in size and causes great trouble, it can be removed by operation.

PROTEIN, or **PROTEID**, is the term applied to members of a group of non-crystallisable nitrogenous substances widely distributed in the animal and vegetable kingdoms and forming the characteristic materials of their tissues

PSORIASIS

and fluids. They are essentially combinations of amino-acids. They mostly dissolve in water and are coagulated by heat and various chemical substances. Typical examples of protein substances are white of egg and gelatin.

PROTEIN THERAPY.—This is a method of treatment by injection of small quantities of protein substances in the case of persons suffering from diseases due to their excessive sensitiveness to similar substances. Diseases in which this form of treatment appears to be specially useful include asthma, hay fever, nettle-rash, and similar skin affections.

PRURITUS is the name applied to a skin disease in which the most prominent symptom is itching. (See **ITCHING**.)

PRUSSIC ACID or hydrocyanic acid is a very deadly poison with a sweet smell and pleasant taste, paralysing every part of the nervous system with which it comes in contact. In its dilute state it is a valuable remedy for irritable conditions of internal mucous membranes, such as that of the stomach, and for irritable skin diseases, being used in small doses to check vomiting or cough, and applied in lotions to relieve itching.

As a poison it acts with great rapidity, and, since cyanide of potassium is much used in the processes of electroplating and photography, and is almost as deadly in its effects as the acid, persons using the cyanide should be very careful.

PSITTACOSIS is a contagious influenza of parrots sometimes communicated to man.

PSORIASIS is a disease of the skin in which raised, rough, reddened areas appear, covered with fine silvery scales.

Symptoms.—The eruption almost always appears first round the back of the elbows and front of the knees. It begins as small pimples, each covered with a white cap of scales, which enlarge in breadth till they form patches 2 or 3 inches wide. At the

PSYCHO-ANALYSIS

same time, patches appear on other parts of the body, the scalp and face especially.

Treatment.—It is essential first of all to attend to the general health and relieve especially any constitutional condition, such as gout or rheumatism, by the appropriate remedies. The two chief remedies which are given internally for psoriasis are salicin and thyroid extract, while tar ointment, chrysarobin ointment, salicylic acid, and ammoniated mercury ointment are among the chief and most successful external applications. Generally the eruption disappears after some weeks of careful treatment, but occasionally cases occur in which all treatment seems of very little use. Arsenic is sometimes administered internally in very chronic cases.

PSYCHO-ANALYSIS and **PSYCHICAL ANALYSIS** are terms indicating a method of investigation and treatment used in severe cases of neurasthenia and allied conditions. It depends upon the theory that these states of disordered mental health have been produced by a repression of painful memories or of conflicting instincts. By such repression these hurtful memories or instincts are kept constantly in a subconscious condition through more or less voluntary effort. As a result, the individual's mental power is needlessly occupied and diverted from the proper objects with which it should be concerned, and he finds difficulty in concentrating his attention upon and adapting himself to the practical realities of everyday life.

Psycho-analysis aims at discovering these repressed memories, which are responsible for the perversion of mental power and of which the affected person usually is only dimly or quite unaware. When they have been discovered and explained, the sufferer is often able to view them in their true light as unimportant, and so to dismiss them from his mind. The psycho-analysis may be conducted

PSYCHOTHERAPY

in various ways. Sometimes a single conversation may bring about the desired effect. In other cases repeated consultations are necessary in order to gain the patient's confidence and lead to the discovery of the repressed memory. In cases of longer standing, the description of his dreams by the patient may afford an indication. In still other cases the method pursued is that the examiner suggests various words and phrases to the patient and times the interval that elapses before a reply is given; those which require an appreciably longer interval for a reply indicate that a repression is taking place in the patient's mind and give some clue to its nature.

The method, which is associated especially with the name of Freud, has somewhat fallen into disuse. This is due partly to the fact that Freud considered the repressed memory to be invariably of a sexual origin, while most authorities hold correctly that this is not always or even usually true, and that many other kinds of memories and instincts may be responsible in different cases. It has also come to be recognised that the repression is rather a symptom than a cause of mental disorder, and that greater importance should be attached to getting the patient into sound general health of mind and body.

PSYCHOTHERAPY is the term applied to any form of treatment in disease which operates through the mind. Almost every form of disease or injury has a certain mental aspect even if this relates only to the pain or discomfort that it causes. In some diseases, and with some temperaments, the mental factor is much more pronounced than in others; and for such cases, psychic modes of treatment are particularly important. The chief methods employed in psychic or mental healing are the following:

Suggestion is the most commonly employed method. Indeed, it is used in almost every department of medi-

PTOMAINÉ POISONING

cine. It may consist, in its simplest form, of a mere reiteration of the statement that the health is better, either by the medical attendant or by the patient, so that this idea becomes fixed in the patient's mind. Or a suggestion of efficacy to cure may be conveyed by the taste or other physical properties of a medicine or by the imposing appearance of some apparatus used in treatment. Again suggestion may be conveyed through an emotional channel, such as that of religious fervour. In occasional cases the result is secured when the suggestion is made to the patient in the hypnotic state.

Persuasion is a method of psychic treatment in which appeal is made to a patient's reasoning faculties. It presupposes a higher type of mind than that required for simple suggestion treatment.

Analysis consists in the elucidation of the half-conscious or subconscious repressed memories or instincts that are responsible for some cases of mental disorder. (*See* PSYCHO-ANALYSIS.)

Education and employment are important factors in mental treatment, and employment should be of a congenial character and one which the patient can carry out without great effort.

PTOMAINÉ POISONING is the general name given to cases in which persons become seriously affected as the result of eating meat, fish, cheese, and other animal substances which have undergone some decomposition. These serious effects are due to poisons produced by bacteria and to the formation of animal alkaloids, known as ptomaines, in consequence of the action of bacteria upon the albuminous materials contained in the food.

Symptoms.—Minor degrees of ptomainé poisoning are of everyday occurrence, and slight attacks of diarrhœa accompanied by feverishness and torpor, following upon the consumption of some of the above-mentioned articles, come within the experience of

PUERPERAL FEVER

almost every one. In severer cases, the symptoms set in shortly after a meal, and consist of nausea, vomiting, and purging with very offensive stools. There are also nervous symptoms, such as great prostration, feverishness, headache, muscular cramps, and drowsiness, proceeding even to death.

Treatment.—It must be remembered that sound meat may go bad when kept for long after cooking, tinned meats being specially liable to change.

The treatment of mild cases of poisoning consists in the administration of a purgative, such as castor oil or calomel, to remove the decomposing material from the system. In more serious cases, an emetic (*see* EMETICS) should be given as soon as possible, if the symptoms have come on shortly after a meal; and stimulants such as brandy or hot coffee are generally necessary. Injections of pituitrin help to relieve the flagging circulation. For long after recovery from a bad attack the person must exercise the greatest care in regard to diet.

PTOSIS means drooping of the upper eyelids.

PUBIS is the bone that forms the front part of the pelvis. The pubic bones of opposite sides meet in the 'symphysis' and protect the bladder from the front.

PUBLIC HEALTH (*see* SANITATION; *also* DISINFECTION, INFECTION, VENTILATION).

PUERPERAL FEVER, or CHILD-BED FEVER, was in former times the great dread of those whose duty it was to attend women in childbed, both in private practice and to a much greater extent in public hospitals.

Symptoms.—The symptoms vary according to the form that the infection takes, and most commonly appear on the second or third day after labour, the first three days being regarded as the critical period in recovery.

When organisms gain access to the

lymphatic vessels and veins, inflammation in the cellular tissue of the pelvis results, and may be followed by abscesses, peritonitis, either localised or general (*see* PERITONITIS), or, later on, by the condition known as 'white leg', caused by blocking of the veins in one lower limb. There are fever, shivering, prostration, and quickening of the pulse as early signs, together with pain in the lower part of the abdomen, followed later on by the symptoms belonging to peritonitis, white leg, or other condition set up by the inflammation. The condition may be recovered from in a week or two, or long-continued ill-health may result, or the patient may speedily succumb.

If the organisms gain access to the general circulation, the serious condition known as 'septicæmia' results (*see* BLOOD-POISONING), and is accompanied by high fever, great prostration, delirium, and increasing feebleness of the heart's action. Recovery in this case is rare.

Treatment.—The prevention of the condition is of the greatest importance. For this reason, care in the choice of a lying-in room, great care to shield the patient from every risk of infection, and above all the most scrupulous cleanliness on the part of all the attendants, are necessary.

When the condition threatens, most reliance is placed upon the careful removal of all clots and other material liable to undergo putrefactive changes. Pain is soothed by the administration of morphia and the use of laudanum fomentations or turpentine stupes. Stimulants are of great importance in order to maintain the heart's action. The treatment of the severer cases is much the same as that for peritonitis (*see* PERITONITIS), and the various complications, such as white leg, require appropriate treatment. The injection of antistreptococcic serum is recommended by some. Antiseptic douches are often used when the condition is established, though many

authorities object to their use in early stages.

PUERPERAL PYREXIA is the name given to any febrile condition, other than 'puerperal fever', occurring in a woman within twenty-one days after childbirth or miscarriage in which a temperature of 100.4° Fahr. (38° C.) or more has been sustained during a period of twenty-four hours or has recurred during that period. Any such feverish attack, as well as the more serious puerperal fever, must now be 'notified' in Great Britain to the local public health authority.

PUERPERIUM is the period which elapses after the birth of a child until the mother is again restored to her ordinary health. It is generally regarded as lasting for a month. There are very often 'afterpains' during the first day in women who have borne several children, less frequently after a first child. (*See* AFTERPAINS.) The discharge is blood-stained for the first two or three days, then clearer till the end of the first week, after which it becomes thicker and less in quantity, finally disappearing altogether, if the case goes well, at the end of two or three weeks. The breasts, which have already enlarged before the birth of the child, secrete milk more copiously, and there should be a plentiful supply on the third day of the puerperium.

Treatment.—The patient should remain in bed for ten days. Among primitive peoples, childbirth causes little interference with the daily avocations, but the higher we proceed in civilisation the more care is necessary in the after-treatment, so that the period stated for rest in bed is not excessive. The patient may, after this, gradually get about as the strength permits, and can generally go out of doors during the third week. If care be not taken in the matter of rest, there is danger that the womb may become displaced, or may not undergo the proper diminution in size,

leading to a degree of permanent ill-health.

Diet should consist of milk and starchy foods till the third day, after which a gradual return is made to normal diet. It is a common popular delusion that alcoholic liquors are necessary for a good formation of milk; but this is not the case. The bowels are generally sluggish, and it is usual to take an aperient, such as castor oil, on the second or third day.

The child requires no food for the first three days after it is born, having stored up in its own body sufficient nutriment for that period. It should, however, be put to the breasts in order to obtain the small amount of fluid they are secreting, and also because suckling stimulates both the breasts and the natural changes taking place during this period. Suckling is beneficial, therefore, both for child and mother. If the child has died, however, a dose of salts should be taken daily by the mother, and belladonna plasters may be applied to the breasts in order to check the secretion of milk.

PULMONARY DISEASES. (See LUNGS, DISEASES OF.)

PULSE.—If the point of one finger be laid gently on the front of the forearm, about one inch above the furrows that mark the wrist, and about half an inch from the outer edge, the pulsation of the radial artery can be felt. This is known as *the pulse*, but a pulse can be felt wherever an artery of large or medium size lies near the surface.

The pulse rate is usually about 72 per minute, but may vary in health from 50 to 100, and is quicker in childhood and slower in old age than in middle life; it increases in all feverish states.

Different types of heart disease have special features of the pulse associated with them. Thus in narrowing of the mitral valve, the great character is irregularity, while in aortic disease the pulse tends to become rapid. In cases where the aortic valve is incompetent, the pulse has the peculiarity

of rising very quickly and collapsing suddenly.

The state of the pulse, as regards hardness, gives a general idea as to the healthiness or the reverse of the arteries throughout the body.

PUPIL is the opening in the centre of the iris through which rays of light pass into the eye.

PURGATIVES are drugs or other measures which produce evacuation of the bowels.

Varieties.—Purgatives are divided into several groups, according to the manner and degree of violence with which they act.

LAXATIVES are those which very gently stimulate the bowels and render the motions slightly more frequent and softer without causing any griping. Among the laxatives are honey, tamarinds, figs, raspberries, strawberries, prunes, stewed apples, sulphur, and magnesia. Liquid paraffin also produces this effect.

APERIENTS produce one or more copious and slightly liquid movements, often accompanied or preceded by griping pains. Examples of this class are aloes, rhubarb, cascara sagrada, senna, castor oil.

DRASTIC PURGATIVES cause a violent action of the bowels, accompanied by considerable griping. In small doses many of them have a simple aperient action, while in excessive doses most are irritant poisons. Such are colocynth, jalap, croton oil.

SALINE PURGATIVES are salts such as sulphate of sodium (Glauber's salt), sulphate of magnesium (Epsom salts), phosphate of sodium, bi-tartrate of potassium (cream of tartar), tartrate of potassium and sodium (Seidlitz powder), and citrate of magnesium.

CHOLAGOGUE PURGATIVES are those which, in addition to stimulating the bowels, increase the flow of bile, such as blue pill, calomel, and grey powder.

Uses.—The most common use of purgatives is to remove the contents of the bowels when their action is sluggish. (See CONSTIPATION.) In many

PURPURA

cases of diarrhœa, due to the presence of irritating material in the intestine, a single dose of purgative medicine, such as castor oil, is given with the object of getting rid of the offending material, after which the diarrhœa ceases. In cases of dropsy due to heart or kidney disease, a purgative such as compound jalap powder, by removing fluid from the body, helps to diminish the dropsy.

A protest must be entered here against the common domestic practice of administering purgatives on every occasion of slight illness, especially in children, regardless of the complaint or symptoms. Undoubtedly many cases of malaise are due simply to constipation; but care must be taken that no serious trouble is present, for many persons have undoubtedly died through receiving only an aperient, whom timely medical aid might have saved. (See ABDOMEN, DISEASES OF.)

PURPURA is a disease characterised by the occurrence of purple-coloured spots upon the surface of the body, due to extravasations of blood in the skin, associated occasionally with hæmorrhages from mucous membranes.

PUS, or **MATTER**, is a thick, white, yellow, or greenish fluid, which is found in abscesses, on ulcers, and on inflamed and discharging surfaces generally. Its colour and consistence are due to the presence, in great numbers, of pus corpuscles. These are derived mostly from the white corpuscles of the blood, and consist also of the superficial cells which die and are shed off in consequence of the inflammatory process. (See ABSCESS.)

PUSTULE means a small collection of pus. (See ABSCESS.) Malignant

PYREXIA

pustule is one of the forms taken by woolsorters' disease. (See ANTHRAX.)

PYÆMIA means a form of blood-poisoning in which abscesses appear in various parts of the body. (See BLOOD-POISONING.)

PYELITIS means a condition of suppuration in the kidney producing pus in the urine. It is due to inflammation of that part of the kidney known as the pelvis, which is connected with the ureter. The inflammation may spread upwards from the bladder or may follow on febrile diseases in which bacteria leave the body by the urine. The condition, though not producing violent symptoms of illness, is often very protracted, lasting over many months, and leading to much debility and loss of weight. It is a common condition in children. The usual treatment is by rest in bed, and administration of citrate of potassium, or of various urinary antiseptics.

PYLOROSPASM means spasm of the pyloric portion of the stomach. This interferes with the passage of food in a normal, gentle fashion into the intestine and causes the pain that comes on from half an hour to three hours after meals and is associated with severe disorders of digestion. It is very frequently produced by an ulcer of the stomach or duodenum.

PYLORUS means the lower or right opening of the stomach, through which the softened and partially digested food passes into the small intestine.

PYORRHEÆA is the name given to any copious discharge of pus. For *Pyorrhœa alveolaris* see under TEETH, DISEASES OF.

PYREXIA means fever. (See FEVER.)

Q

QUARANTINE means that principle of preventing the spread of infectious disease by which persons, baggage, merchandise, etc., likely to be infected or coming from an infected locality are isolated till their harmlessness has been proved to the satisfaction of the authorities. (*See INFECTION.*)

QUASSIA is the wood of a large West Indian tree. The various preparations of the wood are mainly used as a bitter tonic. (*See BITTERS.*)

QUINIDINE is an alkaloid obtained from cinchona bark and closely related in chemical composition and in action to quinine.

QUININE is an alkaloid obtained from the bark of various species of cinchona trees. This bark is mainly derived from Peru and neighbouring parts of South America.

Quinine is generally used in the form of one of its salts, such as the sulphate of quinine, hydrochloride of quinine, or hydrobromate of quinine. All are sparingly soluble in water, much more so when taken along with an acid.

Among the unpleasant effects, due

to large doses, are ringing in the ears, temporary impairment of vision, and sometimes irritation of the kidneys: all these pass off when the drug is discontinued.

The most important use of quinine is its original one in malaria, attacks of which it quickly cuts short or prevents altogether. (*See MALARIA.*) It is not useful, however, in the chronic malarial state. In fevers it is generally held that sulphate of quinine is among the safest antipyretic drugs, in doses of 5 or 10 grains. Ammoniated tincture of quinine given in teaspoonful doses in water is a favourite household remedy in feverish colds and other mild febrile attacks.

As a tonic, minute doses of quinine are much used. For example, a single grain of quinine is often given after meals, or it is more commonly combined with other tonics, as in the citrate of iron and quinine, or in syrup of the phosphate of iron with quinine and strychnine.

QUINSY is an old name for acute tonsillitis, especially that form in which an abscess forms. (*See TONSILLITIS.*)

R

RABIES is the name given in animals to the disease known as hydrophobia in man. (*See HYDROPHOBIA.*)

RADIOSTOL is a substance produced by the action of ultra-violet light upon ergosterol, and contains a large amount of vitamin D.

RADIUM AND ITS ALLIES.—Radium is the most active of these bodies, and from its source, pitchblende, are got most of the others, viz. actinium, polonium, uranium, and thorium. Various kinds of radiation are given off by the metal and its salts, which gradually deteriorate into less active substances.

Treatment by radium.—The beneficial action of various mineral waters has been attributed to minute quantities of radium which they contain. While the presence of radium emanation, which retains its powers only for a few days, may explain the great superiority in action of these waters drunk fresh at their source over the same waters bottled and preserved for some time, yet this theory has undoubtedly been pushed to a fanciful extreme. Radium emanation, made by exposing water to the action of radium, is also employed in glass tubes of various shapes for application to tumors, etc., just like the solid salt; but these tubes of emanation must be refilled every few days.

Radium salts are applied enclosed in various forms of applicator, most commonly in a thin tube enclosed within a capsule of aluminium or platinum. External screens are made to enclose these fine tubes, serving the double purpose of filtration of the less penetrating rays, and strengthening the applicators against damage.

At first the use of radium was limited to the treatment of superficial conditions like rodent ulcer, lupus, nævus, in which it sometimes effected brilliant cures. More recently, in a number of hitherto in-

tractable forms of cancer, radium is used in preference to operation; more frequently it is used in conjunction with surgery. The combination of the two gives a better chance to the patient of a recovery from the disease.

Radium is also used for the destruction of tumors which by reason of their size or position cannot be removed by surgical means; capsules of radium are then buried in openings at various points of the tumor. The tumor cells, thus exposed to a cross fire of the rays, degenerate, and the tumor decreases in size, the capsules of radium being removed after acting for some hours or days. These capsules are also very suitable for application to internal cavities like the womb, where the X-rays could not come into play. Radium is, in some cases, applied as a preliminary to operation, and the tumor being then reduced in size can be more easily and completely removed.

It must be remarked, however, that neither the X-rays nor radium supersedes active surgical measures when these are easily available for the complete removal of a tumor.

Great care is necessary both to avoid giving too prolonged exposure to the patient and to prevent attendants from coming into repeated contact with the rays.

RAYNAUD'S DISEASE is a condition in which the circulation becomes suddenly obstructed in outlying parts of the body, due to spasm of the smaller arteries. Its effects are increased both by cold and by various diseases affecting the blood-vessels.

RECTUM is the last part of the large intestine. It pursues a more or less straight course downwards through the cavity of the pelvis, lying against the sacrum at the back of this cavity. This section of the intestine is about 9 inches long.

RECTUM, DISEASES OF.—Owing to the fact that this part of the intestine is more exposed to external influences than the rest of the bowels, and that it forms the place of lodgment of the stools prior to the evacuation of the bowels, and is therefore often subject to considerable irritation, the rectum is specially liable to various diseases.

Peculiarities of the motions are treated under **STOOLS**, while **PILES** and **FISTULA** are described under these headings. **DIARRHŒA** and **CONSTIPATION** are also treated separately.

ITCHING at the anal opening is often very troublesome. All stimulants, mustard, and pepper must be avoided in the diet. After evacuation of the bowels, the part should be washed with water and no paper used; a soothing lotion, such as calamine lotion, Goulard's water, or carbolic lotion may be applied night and morning, or an ointment of oxide of zinc or of adrenalalin.

PAIN of an acute cutting character, at stool, is often due to the presence of a small ulcer or 'fissure' which will not heal; it is treated by rubbing the ulcer with a caustic point or dividing the muscle beneath. The pain soon disappears. Pain of an aching nature is not uncommonly caused by the presence of piles.

ULCERATION may occur here in the course of tubercular disease of the bowels, in dysentery, or even as the result of the constant irritation due to long-continued constipation. Ulcers in this locality cause a discharge of matter and frequently streaks of blood mixed with the motions. If the ulcer last a long time, it may lead to narrowing and obstruction of the bowel.

ABSCESS in the cellular tissue at the side of the rectum, known from its position as an ischio-rectal abscess, is fairly frequent. It often arises at a late stage in the course of consumption, and is a serious sign with regard

to hope of ultimate cure of the disease. It may also arise, like an abscess elsewhere, as the result of injury, exposure to cold, and other debilitating influences. In any case it is likely to produce a fistula.

PROLAPSE or protrusion of the bowel is a very common complaint, particularly in weakly children. In slight cases, where a ring of bright red mucous membrane half an inch or an inch in width protrudes as the result of straining at stool, the condition is generally easily curable by care. Any irritable condition of the bowels due to diarrhœa, constipation, worms, etc., must be removed and the evacuations regulated by diet and laxatives, so as to avoid all straining. Each time the bowels move, the protruded portion must be returned by steady pressure with a cloth or sponge wrung out of cold water. If the bowel comes down when the child runs about, the wearing of a suitable pad is necessary and the child must lie down for some time each day. Various astringent injections are also used, and the general health is attended to by tonics and other suitable treatment. When the protruded part is very large and the condition does not yield to simple treatment it can be remedied by operation.

TUMORS of small size situated on the skin near the opening of the bowel, and consisting of nodules, tags of skin, etc., are very common, and may give rise to pain, itching, watery discharges, etc. These are easily removed if necessary.

CANCER of the rectum is fairly common, this part of the bowel being one of the chief sites of this disease. It is a disease of later life, seldom affecting young people, and its appearance is generally slow. The symptoms appear gradually and consist of diarrhœa, alternating with attacks of constipation, and, later on, discharges of blood or of thin blood-stained fluid from the bowels,

REFRACTION

together with increasing thinness and weakness, and pains about the lower part of the back and down the thighs. Upon examination, the tumor can be felt projecting from one side or in a ring-form into the interior of the bowel. These cases are usually far advanced before they give rise to much disturbance, and little can be done by way of cure. In early cases, and especially when the cancer affects the back wall of the bowel, it can sometimes be completely excised. More frequently the most that can be done usefully by the surgeon consists in an operation by which an artificial opening is made into the bowel in the left groin, so that the stools are discharged at this point and are prevented from passing over and irritating the tumor. By the latter operation, life is often prolonged for years and much suffering prevented.

REFRACTION is the term applied to the power of the clear media contained in the eyeball to focus images upon the retina. Errors in the refractive power of the eye produce defects of focussing power and are corrected by appropriate spectacles. (See SPECTACLES.)

RELAPSE means the return of a disease during the period of convalescence. Most relapses are due to some injudicious exposure or exertion on the patient's part, or to some error in diet.

RENAL DISEASES are diseases of the kidneys. (See KIDNEY, DISEASES OF.)

RESPIRATION is the process in which air passes into and out of the lungs with the object of allowing the blood to absorb oxygen and to give off carbonic acid gas. Other more complex poisonous substances are also given off from the blood and exhaled into the air. The oxygen, necessary for combustion, is taken in through the lungs, and carried throughout the body by the blood, loosely combined with the hæmo-

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globin of the red blood corpuscles. The carbonic acid gas is similarly collected by the blood, and carried to the lungs, where it diffuses into the air in the air passages, and so is breathed out. (See VENTILATION.)

REST CURE is a form of treatment much used at the present day either alone or in combination with other forms of treatment for special symptoms. It is applicable especially in the case of persons suffering from the effects of too great or too prolonged expenditure of energy, in persons undergoing convalescence after some weakening disease, and in persons whose physical and mental health has been subjected to prolonged strain by business or other worries.

In milder cases, the rest cure consists simply of a period of some days' confinement to bed followed by abstinence from work for a period of two or three weeks. When a more thorough course of treatment is demanded, the rest is combined with special feeding, massage, electrical applications, etc., as mentioned under NEURASTHENIA.

RETICULOCYTES is the name given to newly formed red blood corpuscles, in which a fine network can be demonstrated by special staining methods.

RETINA is the innermost and light-sensitive coat of the eyeball. (See EYE.)

RHEUMATIC FEVER is a popular name for acute rheumatism.

RHEUMATISM is a general term applied to a group of diseases, which have for their chief manifestations inflammatory or degenerative affections of the fibrous textures of joints, muscles, and other parts. The following conditions may be grouped under this name. (1) Rheumatic fever or acute rheumatism, (2) sub-acute rheumatism, (3) muscular rheumatism or myalgia, (4) lumbago, (5) sciatica and neuritis of the arm, (6) rheumatoid arthritis, (7) osteoarthritis, (8) gout, acute or chronic.

I. ACUTE RHEUMATISM, or **RHEUMATIC FEVER**, is a general disorder accompanied by much pain in the joints, feverishness, and copious perspiration, with a tendency to spread from joint to joint, and to involve the smooth membranes of the heart and other organs.

Symptoms.—An attack of acute rheumatism usually begins with chilliness or shivering, followed by feverishness and a feeling of stiffness or pain in one or more joints, generally those of larger size, such as the knee, ankle, wrist, or shoulder. The patient lies helpless in bed. The face is flushed, and the whole body bathed in perspiration, which has a sour, disagreeable odour and is highly acid. The temperature is elevated (usually about 103°). At first the pain is confined to only one or two joints, but soon others become affected, very commonly similar joints on the two sides of the body. The affected joints are red, swollen, hot, and excessively tender. In mild cases one or two joints only are affected, but in severe cases scarcely a joint, large or small, may escape, and the pain, restlessness, and fever then render the patient's condition extremely miserable.

The usual period during which the temperature remains elevated is a week or less, and, if the temperature subsides to normal and again rises, or if it continues elevated beyond ten days, some complication, such as inflammation of the lining membrane of the heart, may be suspected. Such cases may last for many weeks with relapses, in which all the former symptoms return and prolong the illness.

After an attack of acute rheumatism, the patient is much reduced in strength, and pallor persists for a considerable time, but if no complication has arisen, there may be complete recovery in the course of about three weeks. Sometimes, when all the acute symptoms have disappeared, the joints remain swollen, stiff, and painful on movement, but this con-

dition may also gradually pass away, or, on the other hand, the rheumatism may become chronic. In any case there always remains a liability to subsequent attacks.

This disease derives much of its serious import from certain complications which are very apt to arise during an attack. Among these the most frequent and the most serious, as regards the patient's future, is the tendency to complications affecting the heart. Pericarditis (inflammation of the membrane covering the heart) and endocarditis (inflammation of the lining membrane of the heart) are the two most common forms of heart complication. The risk of cardiac complications seems to be greater the younger the patient, and, indeed, in children the joint pains are often so slight as to be overlooked, and the valvular disease may only be discovered accidentally at a later period of life.

Treatment.—The patient should be placed in bed between blankets, and should wear a flannel shirt, of which the front and arms can be opened to admit of examination of the heart and joints. Or he may wear a jacket of gamgee tissue, of which front and back are separate and fastened only by tapes over the shoulders and on the sides. Movements of all kinds should be, as far as possible, avoided. The diet should consist entirely of milk in the acute stage of the disease, and even when the patient is convalescent meat should be given very sparingly.

The affected joints should be wrapped in cotton-wool, kept in position by a light bandage or by tapes. If the pain is very great, relief is sometimes obtained by wrapping the painful parts in flannel cloths wrung out of a strong (5 per cent) solution of washing soda in water, to which some laudanum has been added. Methyl salicylate painted on the painful joints and covered with oil-silk and cotton-wool is a similarly soothing application.

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Constitutional remedies like salicin, salicylate of soda, and salol are extensively used for reducing temperature and relieving pain. Tonics, such as iron and quinine, are necessary during convalescence when there are anæmia and debility. Persons who have suffered from acute rheumatism should ever afterwards be careful to avoid exposure to damp and chill, and to protect the skin by suitable under-clothing.

2. **SUBACUTE RHEUMATISM** is a name sometimes applied to mild attacks of acute rheumatism, in which the temperature does not exceed 101° , and which respond quickly to treatment by salicylate of soda.

3. **MUSCULAR RHEUMATISM** is also known as **MYALGIA**, **FIBROSITIS**, and in special parts of the body as **PLEURODYNIA** (in the side) and **LUMBAGO** (in the loins). The symptoms are those of pain, aching, and stiffness, with sudden agonising cramp coming on at times when the affected muscles are brought into action. Definite thickening of the fibrous tissues and large swellings in the muscles are often found for a time during its course.

Treatment.—A great variety of remedies is used for the relief of muscular rheumatism. In the earlier stages salicylate of soda, salicin, or aspirin may be used as in acute rheumatism, but these are not as a rule of so much service as in the latter condition. Potassium iodide is used to a very large extent in this disease, and compounds containing alkalies, sulphur, and guaiacum, such as the well-known 'Chelsea pensioner' (see **CONFECTIONS**), enjoy a wide reputation. Turpentine in doses of 5 or 10 drops upon a lump of sugar thrice daily is also very effectual in some cases when it is continued for several weeks.

In the stage of acute pain, the application of a plaster, which may contain some soothing substance, *e.g.* belladonna plaster, is very serviceable in preventing painful muscular spasms.

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If the patient is confined to bed, warm applications, such as poultices, anti-phlogistin, or hot baths, give great relief. At a later stage, rubbing of the affected parts, either in the form of massage or by friction with soothing or stimulating liniments, is very helpful. In long-continued cases counter-irritation either with blisters or the button cautery is a useful local remedy. Electricity is often tried in the form of faradism, galvanism, or high-frequency currents. Hot baths, Turkish baths, and especially hot-air or light baths of very high temperature, may often be used with great advantage (*see* **BATHS**). Recently diathermy (electro-thermic penetration) has been found to give great relief (*see* **DIATHERMY**). The mineral waters and baths of various well-known resorts are of undoubted benefit, especially those containing alkalies or sulphur, such as those of Buxton, Bath, Strathpeffer, or Harrogate. Changes to warmer climates during the colder season, and, in any case, the wearing of warm clothing during cold weather, taking sufficient exercise, and the avoidance of dampness, are important in all cases.

4. **LUMBAGO.**—This is myalgia or fibrositis occurring in the strong and dense sinews of the muscles of the back, and is considered separately because of its great frequency and importance in regard to occupation, and because it is readily distinguishable. For its causes, symptoms, and treatment see **LUMBAGO**.

5. **SCIATICA AND NEURITIS OF THE ARM.**—The rheumatic processes may affect the fibrous tissues of various nerves, the nerves of the arm and the great sciatic nerve running down the back of the thigh being especially liable to this affection. In the case of the nerves of the arm, overstrain at work, *e.g.* in hammermen, plays a very important part. The treatment of this condition is described under **NEURALGIA**.

6. **RHEUMATOID ARTHRITIS** is

also known as CHRONIC RHEUMATIC ARTHRITIS, ARTHRITIS DEFORMANS, RHEUMATIC GOUT, and by several other names. It consists of a chronic inflammatory affection of joints, involving at first the fibrous tissues round the joint, and later the synovial membranes and articular cartilages. The condition develops slowly and progressively, and results in stiffening and deformity of the parts affected.

Symptoms.—The disease very commonly begins with an attack of feverishness, with a moderate rise of temperature of considerable duration. Accompanying this, there is pain and swelling in one or more joints, usually small joints such as those of the fingers and toes. The swelling may subside for a time, but gradually many of the smaller joints become affected in the hands or feet, it may be, without rise of temperature. Short attacks of raised temperature occur from time to time with increasing frequency, gradually involving more joints, until, in the course of time, most of the joints in the body may be more or less affected. Thickening of the textures round the joints with stiffness is the result, and there is often considerable deformity from the joints being fixed in certain positions as well as swollen. The muscles of the affected limbs undergo atrophy, and the wasted limbs contrast strikingly with the enlarged joints. This disease often lasts for many years, sometimes continuing for a lengthened period without much change, but tending gradually to progress and to render the patient more and more helpless. It is not attended with the complications of acute rheumatism and is not inconsistent with long life, but its weakening effects upon the system and the ill-health, which is apt to result from want of exercise, render the subject of it more liable to the inroads of other diseases.

Treatment.—Most success is obtained if the condition is recognised early and measures taken to strengthen

the patient's general health and to remove sources of infection, such as those due to defective teeth and putrefaction of the intestinal contents. For this purpose careful dental examination and the administration of aperients and intestinal antiseptics are of great importance. The addition to the diet of milk containing lactic acid bacilli, or buttermilk, is often recommended for a similar reason. Measures which strengthen the patient's general health, such as cod-liver oil, cream, and other fats in the food, seem to be of especial benefit in this disease and may be taken in large quantities for a long period. Aspirin has some effect in relieving pain in this condition, and the injection of fibrolysin, iodolysin, and other preparations of thiosinamin aid in the absorption of the fibrous thickenings round the joints. A course of injections of anti-typhoid vaccine is beneficial in some cases. Locally electrical and hot-air baths or diathermy have a great measure of success in relieving pain and reducing the inflammatory condition of the joints. Blisters and other forms of counter-irritation are also used with success in certain cases.

7. OSTEOARTHRITIS may be the final stage of rheumatoid arthritis. In other cases, especially when a single joint is affected, it is the result of some injury. The change is very commonly found in the hip-joint and in the spine of old people, and less commonly in the knee. There are fibrous changes in and around the joint, and the articular cartilage is absorbed, so that grating is present on movement. The formation of new bone takes place at the edges of the bones, so that the joint may become stiff or quite immovable. The condition may or may not be associated with pain, and, as in the case of muscular rheumatism, the pain and stiffness are apt to be aggravated by bad weather. Deformity and displacement are apt to ensue from stiffness of the joint, and the patient may, if several joints are

RHINITIS

affected, be reduced to a bedridden condition of complete helplessness. As regards treatment, very little can be done except for the relief of pain on the lines above indicated for rheumatoid arthritis, and care must be taken in aged and bedridden persons to prevent the formation of bed sores.

8. GOUT.—This condition may occur in acute or chronic form and is often difficult to distinguish from the condition of rheumatoid arthritis. It is described under Gout.

RHINITIS means inflammation of the nose. (*See NOSE, DISEASES OF.*)

RHUBARB is the root of a plant originally derived from China and Thibet. It has a gentle purgative action when taken in large doses, and at the same time increases the flow of bile. In small doses it has merely a slightly stimulating action upon the functions of the stomach, and is very beneficial in atonic conditions of that organ.

As a purgative the compound rhubarb powder is the form most commonly used in doses of about 40 grains, or, roughly speaking, a teaspoonful. Small doses of the powdered root, 1 or 2 grains, are taken along with bismuth and soda to exert a soothing and stimulating action upon the stomach.

RIBS are the long bones, twelve on each side, which enclose the cavity of the chest. The upper seven are joined to the breast-bone by their costal cartilages and are therefore known as 'true ribs'. The lower five do not reach the breast-bone, and are therefore known as 'false ribs'.

RICE-WATER.—This forms a useful drink for invalids, similar to barley-water. To prepare rice-water one takes 6 tablespoonfuls of rice, washes it in cold water, then places it in a saucepan with 1½ pints of water and allows to simmer for an hour or two, until the bulk of fluid is reduced to about a pint. The rice-water is then cooled, strained, and, if desired, sweetened with sugar and flavoured with lemon.

RICKETS

RICKETS is a disease of childhood characterised chiefly by a softened condition of the bones, and by other evidences of perverted nutrition.

The chief cause appears to be the absence from the diet of certain constituents found in fresh food and known as 'vitamins'. The vitamin concerned is particularly one found in association with animal fats and known as 'fat soluble vitamin D'. Want of fresh air and of sunlight are also important causes.

Symptoms.—The symptoms of rickets most commonly attract attention about the end of the first year, and the disease very rarely appears for the first time after the age of five. The child's appetite is diminished; there is frequent vomiting and diarrhoea; or irregularity of the bowels appears, the evacuations being clay-coloured and unhealthy. Along with this the child ceases to gain in weight or actually falls away in flesh. One of the most noticeable symptoms is profuse sweating of the head and upper parts of the body, particularly during sleep. Bronchitis is also a very common early symptom and often the first to attract attention. In infants, convulsions are sometimes a symptom of rickets and disappear under the treatment appropriate to this disease. At the same time, there is tenderness of the bones as shown by crying when the child is moved or handled. A little later it is noticed that there is delay in learning to sit up and walk, or a child which has begun to walk loses this power.

Gradually changes in the shape of the bones become visible, first chiefly noticed at the ends of the long bones, as in those of the arm, causing enlargement at the wrists. The bones also from their softened condition tend to become distorted and bent both by the action of the muscles and by the weight of the body resting upon them. Thus the child becomes 'bow-legged' or 'knock-kneed', often to an extreme degree. The

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trunk of the body likewise shows various alterations and deformities owing to curvatures of the spine, flattening of the curves of the ribs, and the projection forward of the breast-bone. (See CHEST DEFORMITIES.) The head of the rickety child is square with high 'intellectual' forehead; the individual bones of the cranium remain long ununited, while the soft 'fontanelle' remains unclosed long after the end of the second year, the time by which it should have disappeared; the face is small and ill-developed; and the teeth appear late and fall out or decay early.

The disease usually terminates in recovery with more or less of deformity and dwarfing, the bones, although altered in shape, becoming ultimately firmly ossified.

Treatment.—The treatment of rickets is more hygienic and dietetic than medicinal. Rickets practically does not occur in breast-fed children, so that nursing by the mother for a period of eight or nine months is desirable, if at all possible. On the other hand, too prolonged nursing, which weakens both the mother and the child, is to be avoided. After the child is weaned, the provision of suitable food is of the greatest importance (see INFANT-FEEDING), and it is particularly necessary, where any tendency to rickets is exhibited, that the child should obtain a sufficiency or even an excess of fat in the food. From the end of the first year light animal soups or uncooked or lightly boiled eggs may occasionally be given with advantage. For the provision of fat, extra cream may be added to the milk in the proportion of a teaspoonful or more to each feed, or cod-liver oil may be given in the same way three or four times a day. In this fat the child gets a sufficient amount of vitamin D, which is very important (see VITAMIN).

In the dull atmosphere of industrial towns, great success has followed

RINGWORM

exposure to artificial sunlight (ultra-violet rays) for a few minutes daily. This appears to stimulate the nutrition of children and to prevent or cure rickets. (See LIGHT TREATMENT.) General hygienic measures, including abundance of fresh air, cleanliness, warm clothing, and attention to regularity in all the child's functions, are of the greatest importance.

RIGOR means shivering. If prolonged, it is generally accompanied by raised temperature, and may be a sign of the onset of some acute fever, such as influenza, pneumonia, or some internal inflammation. *Rigor mortis* is the name given to the stiffness that ensues soon after death.

RINGWORM is a vague popular name which includes various diseases of the surface of the skin, caused by vegetable parasites of the nature of moulds. The technical name for ringworm is 'tinca'.

Symptoms.—Very often children who get ringworm are of a weak constitution, but, apart from this, ringworm has little or no effect upon the general health. The disease consists of a disorder in the cuticle and hairs, with more or less inflammation in the underlying true skin. *On the body*, it begins as a small red pimple, which spreads out into rounded patches with raised, red, scaly margin, the skin looking more natural in the centre of each patch, where the disease has partly subsided. *On the head*, one sees merely scaly patches showing the stumps of broken hairs; and if a hair be pulled out and examined under the microscope it is found to be surrounded by masses of the parasite or split up by its growth throughout the hair. Ringworm seldom occurs on the head after the age of fourteen. Ringworm of the beard (sycosis) is apt to show great irritation, and each affected hair is surrounded by a small collection of pus. Favus appears as a yellow crust, and neighbouring crusts, being flattened by mutual contact, give the

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head its characteristic 'honeycomb' appearance. Even the nails may be affected by ringworm, and they then assume a discoloured, thickened, brittle condition.

Treatment.—Ringworm on the body and limbs is almost always very easily got rid of; on the face it is harder to cure; while on the head, in children, it may run a course of months or years even under the most skilful treatment.

When on the body or face, it seldom fails to disappear speedily if painted night and morning with strong tincture of iodine (10 per cent) for a few days.

Ringworm of the scalp in children is more difficult to treat. The hair must be cut as short as possible all round the patches, and thoroughly washed with soap at frequent intervals to remove all scales. Strong antiseptics are also rubbed in as ointments. Some of the most commonly used substances are perchloride of mercury, sulphur, carbolic acid, iodine, salicylic acid, chrysarobin, and formalin. The application of the X-rays for a sufficient time just to make the hair fall out, very often effects a cure, and the hair should grow again after recovery.

In ringworm of the beard, the treatment is much the same as for the scalp condition. The hair may be either shaved or closely cut, and an antiseptic ointment rubbed in. A highly successful method of treatment, which is also quite painless, consists in pulling out several of the affected hairs daily, and pushing a carefully sharpened splinter of wood, which has been dipped in pure carbolic acid, down to the bottom of

RUPTURE

each empty follicle. A starch poultice may be applied each night.

Great precautions must be taken not to infect others. Children with ringworm of the scalp must not wear the caps of other children, nor go to school, nor to a barber. Persons with ringworm of the beard must not use shaving instruments employed by other people. When ringworm affects the body, the clothing must be disinfected.

ROCHELLE SALT, SEIGNETTE SALT, and TARTRATED SODA are other names for tartrate of sodium and potassium, a saline purgative which forms the chief constituent of Seidlitz powder. The dose of Rochelle salt as an aperient is 2 to 4 drams or a heaped dessertspoonful.

RODENT ULCER is the name given to a very chronic form of ulcer, which is found chiefly about the nose and face of elderly persons, and which gradually increases in size. It stands between a simple chronic ulcer and a cancer, being much slower in its growth than the latter. Treatment consists in cutting out the ulcer with the healthy skin for a little distance all round. Recently, however, these ulcers have been found to be very curable by X-rays, radium, and other forms of radiant energy, and may heal up completely after a few exposures to radium.

ROENTGEN RAYS (*see* X-RAYS).

RUBBING (*see* MASSAGE and LINIMENTS).

RUPTURE is a popular name for hernia. (*See* HERNIA.) The term is also applied to the tearing of a muscle or ligament, bursting of a blood-vessel, etc.

SACCHARIN, or **GLUSIDUM**, is a coal-tar product of white crystalline appearance. It has an extremely sweet taste, being prepared in various strengths so as to equal in sweetness from 300 to 500 times its own weight of cane-sugar. It escapes from the body unchanged, having practically no effect upon the tissues beyond its influence upon the sensation of taste. Accordingly it is used by diabetics, corpulent persons, and others to whom sugar is for some reason harmful.

SACRUM is the name given to a bone forming a portion of the spinal column near its lower end.

ST. VITUS'S DANCE, or **CHOREA**, is the name applied to a disorder of the nervous system occurring for the most part in children, and characterised mainly by involuntary jerking movements of the muscles.

Symptoms.—The symptoms of St. Vitus's dance are in some instances developed suddenly as the result of fright, but much more frequently they come on gradually. They are usually preceded by changes in the temper and disposition, the child becoming sad, irritable, and emotional, while at the same time the general health is impaired. The first thing indicative of the disease is a certain awkwardness or fidgetiness of manner, together with restlessness, the child being evidently unable to continue quiet, but frequently moving the limbs into different positions. In walking, too, slight dragging of one limb may be noticed. The convulsive muscular movements usually show themselves first in one part, such as an arm or a leg, and there is a tendency for the disorderly symptoms to be more marked on one side than on the other. The twitching movements usually pass off during sleep. Speech is often affected, both from the jerking movements of the tongue and from speech sometimes taking place during the act of drawing a breath. These symp-

toms usually pass off in one or two months. The heart may suffer, especially from inflammatory conditions similar to those which accompany rheumatism, and which frequently lay the foundation of permanent heart disease. (*See* **HEART DISEASES**.)

Treatment.—The disease, under suitable hygienic conditions, tends to recover of itself. These conditions, however, are all-important, and embrace the proper feeding of the child with nutritious light diet, the absence of all sources of excitement and annoyance, such as being laughed at or mocked by other children, and the removal of any causes of irritation and of irregularities in the general health. For a time, and especially if the symptoms are severe, confinement to bed may be necessary, but as soon as possible the child should be taken out into the open air and gently exercised by walking. Of medicinal remedies the most serviceable appear to be arsenic and iron, bromide of potassium, aspirin, and antipyrine. After recovery the general health of the child should for a long time receive attention, and care should be taken to guard against excitement, excessive study, or any exhausting condition, physical or mental, from the fact that the disease is apt to recur.

SAL VOLATILE is another name for aromatic spirit of ammonia, a liquid of burning taste and great stimulating powers. Its action depends upon various volatile oils, ammonia, and carbonate of ammonia which it contains. It is used as a stimulating expectorant in cough mixtures, and is very valuable as a stimulant in faints due to weakness of the heart's action. The dose is from half to one teaspoonful in a wine-glassful of water.

SALICIN is a crystalline powder of bitter taste and slight solubility, much used for the treatment of acute rheumatism.

SALICYLATE OF SODA is a white crystalline substance which has a sweet, mawkish taste, which to most people is very unpleasant.

The main use is in acute rheumatism, doses of 10, 15, or more grains being given several times daily, according to circumstances. Its harmful properties are avoided by giving it with an equal quantity of bicarbonate of soda. In tonsillitis and other inflammations of rheumatic nature its use is also followed by great benefit.

SALINES are purgatives belonging to the class of salts which produce watery evacuations. (See PURGATIVES.) Normal saline solution is a solution of common salt (sodium chloride) in strength one teaspoonful to a pint of water.

SALIVA is the fluid which is always present to some extent in the mouth, and is secreted in specially copious amount during a meal, or when the salivary glands are stimulated, as for example by an acid substance placed in the mouth.

SALIVARY GLANDS are the glands situated near, and opening into the cavity of the mouth, by which the saliva is manufactured. They include the *parotid gland*, placed in the deep space that lies between the ear and the angle of the jaw; the *submaxillary gland*, lying beneath the horizontal part of the jaw-bone; and the *sublingual gland*, which lies beneath the tongue.

SALOL is a white, crystalline, tasteless substance with faint aromatic odour, widely used as an intestinal antiseptic, when it is desired to check fermentative and putrefactive changes.

SALPINGITIS is the name applied to inflammation situated in the Fallopian tubes.

SALT is the general term applied to chemical substances in which a metal is substituted for the hydrogen of an acid. 'Common salt' is sodium chloride. Salt of lemons and salt of sorrel are popular names for binoxal-

ate of potassium, a poison. 'Bay salt' is a common salt derived from sea water. 'Salts' is a popular name applied to Epsom salts, Glauber's salt, and Rochelle salt. Spirit of salt is an old name for hydrochloric acid.

SALVARSAN, or DIOXYDIAMIDO-ARSENOBENZENE, is an organic compound of arsenic used for treatment of syphilis and other chronic infectious diseases. Recently a modification, NEOSALVARSAN, has been found more suitable. Dissolved in distilled water, it is injected direct into a vein or into the substance of a muscle.

SANATORIUM, or SANITORIUM, is the name applied to an establishment for the treatment of sick persons, especially convalescents or those who are not extremely ill. The term is now applied particularly to institutions for the open-air treatment of tuberculosis. (See CONSUMPTION.)

SANDALWOOD OIL is a yellowish, fragrant-smelling oil with bitter taste. It has an antiseptic action and is administered in doses of from 5 to 20 drops, for inflammation of mucous membranes, particularly those of the urinary organs.

SANITATION is the science which aims at the prevention of disease, and although really the product of modern years, was yet in its rudest elements recognised in ancient times.

It aims at correcting the evils arising from the aggregation of people in cities and towns. It benefits the country dweller and the resident in town by improved methods of sewage and refuse disposal.

Much has already been accomplished. But a few years ago the death-rate in many places reached a total of more than 30 per 1000 inhabitants per year. To-day these places may show a death-rate of under 20 per 1000 per annum. We cannot estimate the effects of sanitary effort by single years. Results vary from year to year, but over a series

of years the visible result of lives saved and lengthened, with its benefit to the State, is almost astonishing.

Houses and sites for building.—The health of the community depends in a large measure on the condition of its housing.

The site should be preferably on porous soil, such as gravel or sand, whence water can easily be carried away. In every case, whether on porous soil or on clay, the ground should be well drained. In towns, no choice can usually be made in the site, and houses are placed wherever convenient. Many are placed on 'made soils', but care ought to be taken that all organic matters have been completely decayed, a process which takes at least three years for completion, and not until that period has elapsed can a building be safely placed on a site of made soil. The site of the house should be covered by a layer of concrete to prevent the ground air and moisture gaining entrance into the house. The house should be so placed as to allow sufficient air to circulate around it, and to have abundance of light, and so elevated as to allow for proper drainage arrangements.

To obviate dampness, an impervious layer of slates bedded in cement, or of lead, or asphalt, known as the *damp-proof course*, should be inserted in the wall, at least 6 inches above the ground level.

In towns great overcrowding of houses exists, due, only too frequently, to the inability of the householder to pay for a house large enough to accommodate his family with sufficient air-space. The minimum air-space permissible is 300 cubic feet for each adult and half that amount for a child. Local authorities and private individuals have endeavoured to provide cheap and efficiently sanitary houses, so that the artisan may obtain a house sufficient for his needs at a low rent, but until more

has been done in this way, the evils of overcrowding will still continue to exist.

Air and ventilation.—Pure atmospheric air contains a little over 20 per cent by volume of oxygen, about 79 per cent of nitrogen, and about 4 parts per 10,000 of carbonic acid gas, together with traces of watery vapour, ammonia, etc. The carbonic acid present is generally accepted as the standard of impurity. The air is naturally purified by winds driving the impurities away and allowing fresher air to take its place; by rain removing dissolved gases and washing away suspended impurities; and by vegetable life absorbing carbonic acid in the day-time and giving off oxygen. Fogs tend naturally to pollute it. It is vitiated by respiration, combustion, putrefactive processes of animal and vegetable matters, and by the products of trades and industries, such as the mineral particles set free in grinding and the organic effluvia given off in soap-making, bone-boiling, and tannery work.

Smoke from factories and open fires is a serious problem in diminishing the sunshine of large towns, but is being gradually lessened by the increasing use of gas.

Ventilation aims at the correction and removal of these impurities and the supplying of abundant pure air. (For details of ventilation consult the article on VENTILATION.)

Water and water supplies.—An adequate supply of water is necessary for every condition of life. Every township of any importance at the present time aims at possessing a pure and abundant supply. This supply is utilised for domestic, municipal, and trade purposes. The domestic supply must be liberal for cleanliness, cooking, drinking, and sanitary requirements. Municipal requirements for washing the streets, flushing the sewers, and extinguishing fires, absorb a considerable quantity. Trade processes vary in their demands, ac-

SANTONIN

cording to the nature of the industries. It is generally estimated that at least 25 gallons each day per head of the population are needed for domestic arrangements, 10 gallons for municipal purposes, and probably 25 gallons additional for manufacturing businesses.

Infectious diseases are due to the entrance into the body of certain poisons, which multiply in the system, and can be given off from the person affected, and thus may be received into the body of other individuals, in whom they may reproduce the disease. (*See INFECTION and DISINFECTION.*)

SANTONIN is a yellow crystalline powder obtained from 'santonica,' also known as 'worm-seed'. It is used for its action in expelling worms, as it is highly poisonous to round-worms and thread-worms. Santonin is generally given in doses of about 2 grains to children or 5 grains to adults.

SARSAPARILLA is a root largely used in domestic medicine as a 'blood-purifier', and is an ingredient of many patent medicines, but it seems to be really possessed of very little power.

SAUSAGE-POISONING may be of the nature of ptomaine poisoning or of the special form known as botulism. (*See PTOMAINE POISONING.*)

SCAB is the name given to the crust which forms on superficial injured areas. It is composed of fibrin which is exuded from the raw surface together with blood corpuscles and cells entangled in its meshes. Healing takes place naturally under this protection, and the scab dries up and falls off when healing is complete. Scabs appearing on the face without any previous abrasion are frequently of infectious nature. (*See IMPETIGO.*)

SCABIES (*see ITCH.*)

SCALDS (*see BURNS AND SCALDS.*)

SCALP is the soft covering of the skull upon the top of the head. It consists of five layers, which from the surface inwards are as follows: the

SCARLET FEVER

skin, thickly furnished with hair; next a subcutaneous layer of fat, rendered tough and stringy by many bands of fibrous tissue passing through it to bind the skin and the third layer together; thirdly, a tough membrane composed of fibrous tissue, known as the 'epicranium'; fourthly, a loose layer of connective tissue attaching the epicranium to the deepest layer, and permitting the free movements of which the scalp is capable; and, finally, another fibrous layer clinging closely to the skull, and known as the 'pericranium'.

Bleeding from this situation is often especially hard to check, though its amount is not likely to become serious. (*See HÆMORRHAGE.*)

The chief diseased conditions to which the scalp is liable are cysts (*see WENS*), baldness (*see BALDNESS*), and ringworm (*see RINGWORM*).

SCALPEL is a small, straight, surgical knife.

SCAPULA is another name for the shoulder-blade.

SCAR is the name applied to a healed wound, ulcer, or breach of tissue. A scar consists essentially of fibrous tissue, covered by an imperfect formation of cuticle in the case of scars on the surface of the skin.

The more specialised textures are not repaired when a scar forms; thus on the skin-surface the scar does not reproduce hairs and sweat-glands, only the general epithelium growing over the wounded surface. A wound whose edges are accurately brought together and in which healing is rapid shows far less contraction afterwards, and leaves a fainter scar, than one in which the wound is allowed to gape, and in which healing is slow.

SCARLET FEVER and **SCARLATINA** are names applied to an acute infectious disease, characterised by high fever, sore throat and a diffuse red rash upon the skin.

Symptoms.—The period of incubation (*i.e.* the time elapsing between the reception of infection and the

SCARLET FEVER

development of symptoms) is only two to three days, but in occasional cases the patient may take a week to develop his first symptoms. The fever usually begins suddenly with rapid rise of temperature to 104° or thereabouts in the first few hours. There also occur shivering, vomiting, headache, sore throat, and marked increase in the rate of the pulse. In young children convulsions or delirium may also usher in the fever. At the end of about 24 hours from the commencement of the fever the rash appears. It is first seen on the neck, chest, arms, and hands, but quickly spreads all over the body and legs. The rash consists of minute, thickly set, red points which unite to form a general redness not unlike that produced by application of mustard to the skin. The rash tends to avoid the region of the nose and lips. In ordinary cases the rash is at its height in about two days and then begins to fade, being gone at the end of a week from its first appearance. The tongue at first is covered by thick, white, creamy fur through which on the second day red papillæ project, giving the appearance of a 'white strawberry tongue'. The interior of the throat is red and swollen. In favourable cases the fever falls distinctly about the third day, the symptoms at the same time rapidly improve, and the rash fades. The throat becomes more comfortable, and peeling of the skin shows itself first about the cheeks and neck, and later spreads all over the surface of the body. This may be in the form of fine bran-like scales, or the cuticle may come off in large pieces, especially about the hands and feet. The duration of this process is variable, but it is rarely completed before the end of six weeks, or even more. During this stage the patient, who is now feeling quite well, must take particular care against exposure to cold, for during the peeling there is special liability to inflammation of the kidneys.

SCARLET FEVER

The complications and effects of scarlet fever are among the most important features in this disease. The most common and serious of these is *inflammation of the kidneys*, which may arise during any period in the course of the fever, but is specially apt to appear in the convalescence, following on a chill. One of the most prominent symptoms is slight swelling of the face, particularly of the eyelids. If the urine is examined, it will probably be observed to be diminished in quantity and of dark smoky or red appearance, due to the presence of blood; while it will also be found to contain a large quantity of albumin. Occasionally this condition does not wholly pass off, and consequently lays the foundation for chronic Bright's disease. (See BRIGHT'S DISEASE.) Another of the more common results of scarlet fever is *suppuration of the ears*, due to the extension of the inflammatory process from the throat into the middle ear. This not infrequently leads to permanent ear-discharge, with deafness, and an abscess sometimes forms in the mastoid cells. (See EAR, DISEASES OF.) Other maladies affecting the heart, lungs, pleura, etc., occasionally arise in connection with scarlet fever, the chief of these being *endocarditis*, which often lays the foundation of valvular disease of the heart later in life. *Arthritis* or *scarlatinal rheumatism* is a fairly common complication of the disease, producing swelling and pain in the smaller rather than in the larger joints.

Treatment.—In the treatment of scarlet fever, one of the first requirements is the isolation of the case, with the view of preventing the spread of the disease. Children who have been in contact with cases of scarlet fever should be isolated for seven days before being allowed to mix with other children in school or elsewhere. This affords a sufficient margin beyond the longest possible period of infection.

When the patient is treated at

home, the sick-room should contain only such furniture as may be required, and the attendants should come as little as possible in contact with other members of the household. It is usual to keep the patient in bed for three weeks from the onset of the disease, and thereafter great care must be taken to avoid chills owing to the danger of kidney complications. Should other children be in the house, they should be kept away from school during all the time that the risk of infection continues. In convalescence, with the view of preventing the scales from flying about, the application to the skin of pure eucalyptus oil is sometimes practised. At the same time the throat may be swabbed with carbolic glycerin.

All books, toys, etc., used by the patient during the illness should be carefully destroyed, as their preservation has frequently been known to cause an outbreak of the disease at a subsequent time.

As to general management during the progress of the fever, in favourable cases little is required beyond careful nursing and feeding. The diet all through the fever and convalescence should be of light character, consisting mainly of milk food. Soups may be taken, but solid animal food should be avoided. Attention to the daily movement of the bowels is of special importance in reference to the onset of kidney complications, and any mild aperient, especially a saline, may be used for this purpose. When there is discharge from the ears, they may be syringed with warm boric lotion, which both gives relief and purifies the discharge.

SCHICK'S TEST is a method designed for finding out the liability of individuals to contract diphtheria. (See DIPHTHERIA.)

SCHOOL CHILDREN.—With regard to the earliest period of life, the management of children will be found under INFANT-FEEDING and

CHILDREN, PECULIARITIES OF. After infancy, there follows a period between the ages of two and five, during which the child is more or less independent but requires a considerable amount of care, which at the present day is supervised by Child Welfare Clinics. Thereafter from about the age of six to fourteen years the child comes under the discipline of school, and special arrangements for the welfare of children are then made through the educational agencies.

Schools are now built on a 'pavilion' plan, and great care is taken in regard to their site, construction, ventilation, warming, etc. The appropriate temperature for rooms in infant departments is about 65° Fahr., and in classrooms for older children from 56° to 60° Fahr. Some form of central heating is necessary, and also some system of artificial ventilation. The minimum requirement of space per scholar is 100 cubic feet of air with 10 square feet of floor space, but, as a rule, the space allowed is larger than this.

Seats and desks form a very important matter both in regard to the comfort and, more particularly, in regard to the development of growing children, because if they are badly constructed or unsuitable in size the child is apt to assume unsuitable postures and undergo deformity in development (see SPINE, DISEASES OF).

The provision of cloakrooms with pegs, of covered sheds for recreation, and of suitable closet and lavatory provision is very important.

Drinking-water is an important matter, because drinking-cups often form a means of communicating disease such as diphtheria. In the crystal stream drinking-fountains no cups are necessary, scholars drinking directly from a weak upward jet of water. Small folded paper cups are cheap and can be thrown away after use. In England, education authori-

ties are empowered to provide meals for school children in cases where it is believed the children are not suitably nourished, and to recover the cost from the parents where possible. The **diet** for school children should be plain, generous, easily digested, and varied, with only a limited amount of fresh meat, but with a liberal allowance of cooked and fresh fruit. Milk is a food specially suited for children. The craving for sweet things should be met by supplying these at the end of a meal after the appetite has been satisfied. Indigestion in children may arise from unsuitable food and frequently from bad teeth. Over 75 per cent of the elementary school children of Great Britain give evidence of **dental caries**, and an early investigation of the teeth is desirable, together with teaching the use of the tooth-brush as an essential act of cleanliness.

Under the Education Acts of Great Britain, children from five to fourteen years of age must attend school, while mentally defective, blind, and deaf children must receive education up to the age of sixteen years. For the successful teaching of scholars it is important that they should not suffer from **mental fatigue**. This is brought about not so much by long hours of work as by a wrong system of teaching. In the classroom, quiet and fresh air are very important (*see FATIGUE*). For the amount of sleep requisite at different ages see **CHILDREN, PECULIARITIES OF**.

The **eyesight** in about 20 per cent of scholars is defective, and in 10 per cent seriously defective. Young children are specially handicapped by short sight; and at a later stage, when reading of books is a more essential part of study, those who suffer from long-sight are apt to develop symptoms of eye strain. (*See SPECTACLES*.)

Defective hearing due to ear disease is present in between 10 and 20 per cent of scholars. The effect of this as

regards lessons is that the child misses spoken words and shows seeming inattention or stupidity. Owing to the strain of his attention in class he is more readily exhausted by lessons.

Exercise (*see EXERCISE*) is a matter of great importance, partly because when physical exercises are suitably interspersed with lessons the circulation and general sense of well-being are increased so that more ready attention is given to teaching. Also physical exercises can be made to correct faulty and defective conditions in development and bad habits in regard to posture. Special attention should be given to children who develop faulty postures or have a tendency to deformities. These include children with the chest defectively formed as the result of rickets or early tuberculous disease, and particularly children with a tendency to lateral curvature of the spine or the development of round shoulders. (*See SPINE DISEASES*.)

Among the **diseases** for which the teacher must be specially on the outlook are measles, diphtheria, and scarlet fever among the infectious diseases (*see INFECTION*); discharges from the nose and from the ears which indicate inflammation in these cavities; the presence of bald patches indicating ringworm (*see RINGWORM*); and also the presence of scabies about the hands, and impetigo as shown by crusts about the face.

SCIATICA means pain connected with the great sciatic nerve which runs down the back of the thigh. (*See NEURALGIA*.)

SCROFULA, or **STRUMA**, is a state of constitutional weakness, generally exhibiting itself in early life, and characterised mainly by defective nutrition of the tissues, which renders them a ready prey to tuberculosis.

SCROTUM is the name applied to the pouch of integument within which the testicles are suspended. It consists of a purse-like fold of skin, within

SCRUM-POX

which each testicle has a separate investment.

SCRUM-POX is a popular name for a contagious affection of the face and head affecting football players. (See IMPETIGO.)

SCURF, or **DANDRIF**, is a popular name for the scaly condition that is frequently found on the scalp, and usually precedes baldness. (See BALDNESS.)

SCURVY, or **SCORBUTUS**, is a diseased condition of the blood and tissues shown by a tendency to hæmorrhages, due to deprivation of fresh vegetables, which contain the necessary 'vitamin C'.

Infants too may suffer from scurvy as the result of improper feeding and unhealthy surroundings.

Symptoms.—The symptoms of scurvy come on gradually. The countenance acquires a sallow or dusky hue; the gums are tender and the breath offensive. Later the gums are livid, spongy, ulcerating, and bleeding; the teeth are loosened and drop out; and bleeding takes place in the skin and other textures. The hæmorrhages may cause swellings of the muscles in which they occur, having the appearance of extensive bruises, and tending to become hard and brawny.

Treatment.—No disease is more easily treated, both as regards prevention and cure, than scurvy, the single remedy of fresh vegetables or fruit securing both these ends. Potatoes, cabbages, onions, carrots, turnips, etc., and most fresh fruits, will be found of the greatest service for this purpose. Lime-juice, lemon-juice and orange-juice are often employed, but must be fresh to be of value.

SEA-SICKNESS is a peculiar set of symptoms experienced by many persons when subjected to the pitching and rolling motion of a vessel at sea, of which depression, giddiness, nausea, and vomiting are the most prominent.

SEA-SICKNESS

Symptoms.—The symptoms generally show themselves, soon after the vessel has begun to roll, by the onset of giddiness and discomfort in the head, together with a sense of nausea and sinking at the stomach, which soon develops into intense sickness and vomiting. Along with the sickness there is great physical prostration, as shown in the pallor of the skin, cold sweats, and feeble pulse, accompanied with mental depression and wretchedness. In almost all instances the attack has a favourable termination, and it is extremely rare that serious results arise, except in the case of persons weakened by other diseases, although occasionally the symptoms are for a time sufficiently alarming.

Treatment.—Innumerable preventives and remedies have been proposed, but most of them fall far short of the success claimed for them. No means has yet been discovered which can altogether prevent the occurrence of sea-sickness, although there is less risk of sickness in a large and well-ballasted vessel than in a small one. Nerve sedatives are among the most useful drugs which can be employed; and full medicinal doses of bromide of potassium or chloral taken before sailing appear to act usefully in the case of many persons. When the vessel is in motion, or even before starting, the recumbent position with the head low and the eyes closed (so that the motion of the ship and sea cannot be seen) should be assumed by those at all likely to suffer, and, should the weather admit, on deck rather than below—the body, especially the extremities, being well covered. Another good preventive measure consists in taking a large dose of aperient medicine before leaving land. Should sickness supervene, small quantities of some light food, such as thin arrowroot, gruel, or soup, ought to be swallowed if possible, in order to lessen the sense of exhaustion, which is often extreme, as well as to mitigate the

SEBORRHŒA

pain of retching by giving the stomach something upon which it can contract. Alcohol tends rather to aggravate the sickness, but in the form of champagne it has been highly recommended by many.

SEBORRHŒA is the name given to a group of diseases of the skin in which the sebaceous or oil-forming glands are at fault. It is shown either by accumulations of dry scurf, or by the formation of an excessive oily deposit on an otherwise healthy skin. (See *under SKIN DISEASES.*)

SECRETION is the term applied to the material formed by a gland as the result of its activity. For example, saliva is the secretion of the salivary glands, gastric juice that of the glands in the stomach wall, bile that of the liver. Some secretions consist apparently of waste material which is of no further use in the chemistry of the body. These secretions are often spoken of as 'excretions'; for example, the urine and the sweat. For further details, see *SALIVA, URINE, ENDOCRINE GLANDS, etc.*

SEDATIVES are drugs and other measures which soothe over-excitement of the nervous system, whether the effect of this excitement be pain, sleeplessness, delirium, muscular spasm, etc. Those sedatives that soothe pain are generally spoken of as anodynes, sedatives in sleeplessness or delirium are known as hypnotics, sedatives of spasm are called antispasmodics. (See *COLIC, HEADACHE, HYPNOTICS, NEURALGIA, PAIN.*)

SEIDLITZ POWDER, or **COMPOUND EFFERVESCENT POWDER**, is a mild purgative composed of Rochelle salt and bicarbonate of soda, which are wrapped together in a blue paper, and tartaric acid, which is wrapped in a white paper. The contents of each paper are dissolved separately in a little water—half a tumblerful or less; the two solutions are then mixed and quickly swallowed while effervescing. For most persons one powder is not

SERUM

sufficient, but two taken in the morning form a mild and efficient remedy in constipation, associated with headache and sickness.

SENNA is one of the most active of the simple laxative drugs, producing considerable griping if used alone.

A favourite household method of administering senna is to soak sultana raisins in the infusion of senna for some hours, when they absorb the senna, swell up, and are readily taken by children.

Another method is to make a paste of *senna with prunes* as follows: 1 lb. prunes, 1 lb. brown sugar, 1½ oz. senna powder, and 1 oz. ground ginger are used; the prunes and sugar are placed with ½ pint water in a pan, stewed for one hour, allowed to stand until luke-warm, and put through a sieve; the senna powder and ginger are then stirred in until the whole becomes a fine paste. The paste is kept in a covered jar. The dose for children is a small teaspoonful, for adults a teaspoonful.

SENSATION (see *PAIN, etc.*).

SEPSIS means poisoning by the products of a putrefactive process. This process is set up by the growth of micro-organisms in the body, and the general symptoms which accompany it are those of inflammation. Two forms of sepsis to which attention has been particularly directed of late are *oral sepsis*, a diseased condition in the mouth which may affect the general health through the absorption of poisonous products, and *puerperal sepsis*, a condition occurring after childbirth, when putrefactive material is specially liable to be absorbed from lacerations in and near the uterus.

SEPTICÆMIA is a serious form of blood-poisoning. (See *BLOOD-POISONING.*)

SEQUESTERUM is the name given to a fragment of dead bone cast off from the living bone. (See *BONE DISEASES.*)

SERUM is the fluid which separates from blood, lymph, and other fluids

of the body when clotting takes place in them.

Serums are manufactured for protection against various diseases. Their mode of preparation is in general a very complex one, and particularly that part of it which relates to the estimation of the protective strength of the serum. Roughly speaking, the process consists in administering to some animal, usually a horse, repeated small doses of the toxin of the particular disease. After a prolonged course of this treatment, lasting it may be over many months, blood is withdrawn from the animal's veins, and its serum separated from the other constituents. In the serum, the antitoxic or bacterium destroying products, as the case may be, are contained.

The chief antitoxic serums which so far have been successfully produced are an anti-diphtheritic serum, a serum which protects from tetanus, and one that neutralises snake-poison. The serum is injected beneath the skin by means of a large hypodermic syringe.

Among the serums which have been prepared to destroy bacteria may be mentioned the anti-streptococcic serum, which is often valuable in cases of blood-poisoning; a serum, which has been tried in pneumonia and allied diseases; one used in cases of cerebro-spinal fever; and another used in dysentery.

SHINGLES is a popular name for herpes. (See HERPES.)

SHOCK is the name applied to a condition in which the vital activity is profoundly lowered, usually as a result of severe injury.

Symptoms.—The person suffering from shock is in a state of great prostration, but can be roused to answer intelligently. The face and skin generally are pale, and copious perspiration breaks out. The lips and ears are pallid, and the voice whispering. The pulse is rapid and often almost imperceptible, the res-

piration irregular and sighing, and the temperature may be subnormal. The patient complains greatly of thirst which can hardly be satisfied. From this state he may recover within a few hours.

Treatment.—When shock has occurred, stimulants may be given, the foot of the bed is raised, and the patient is surrounded with warm blankets and hot-water bottles.

Various fluids such as saline solution or solution of gum, or in cases where much blood has been lost, fresh blood from another person, are often injected into the veins. Hypodermic injections of pituitrin and other substances which are stimulating to the heart are also administered.

Shock is also a popular term applied to apoplectic seizures, people talking of a 'shock of paralysis' or 'stroke of paralysis', which comes on with startling suddenness. (See APOPLEXY.)

SHORT-SIGHT (see SPECTACLES).

SHOULDER is the joint formed by the upper end of the humerus and the shoulder-blade or scapula.

SHOULDER-BLADE, or **SCAPULA**, is a flat bone as large as the flat hand and fingers, placed on the upper and back part of the chest. To it many of the large muscles that move the arm are attached.

SICK-HEADACHE (see HEADACHE).

SICKNESS (see VOMITING and SEA-SICKNESS).

SICK-NURSE (see NURSING).

SICK-ROOM (see NURSING).

SIGHT (see VISION, DISORDERS OF).

SINAPISM is an application containing mustard. (See MUSTARD.)

SINUS is a term applied to narrow cavities of various kinds, occurring naturally in the body, or resulting from disease. Thus it is applied to the air-containing cavities which are found in the bones of the face and which communicate with the nose. (See ANTRUM.) Those cavities, the

SKELETON

result of disease, which are produced when an abscess has burst but remains unhealed, are also known as sinuses.

SKELETON is the comprehensive term applied to the hard structures that support or protect the softer tissues of the body. (See BONE.)

SKIAGRAM is the name applied to a photograph made by X-rays.

SKIN.—Skin is the membrane which everywhere envelops the outer surface of the body, meeting, at the various orifices of the body, with the mucous membrane which lines the internal cavities. The skin consists of two distinct layers (a) *the cuticle*, also known as *scarf-skin*, *epidermis*, or *epithelium*, which is a cellular covering; and (b) *the true skin*, also known as the *cutis vera*, *corium*, or *dermis*, which is a fibrous covering.

SKIN CHAFING (see CHAFING OF THE SKIN.)

SKIN DISEASES.—These form a large and important class. In number they are very extensive, owing to the varied forms of change which the skin texture may undergo, and to the different structures in the skin which may be specially affected. The following classification is to a certain extent open to the objection that it proceeds on several principles, and that therefore certain diseases might fall into more than one group. But this classification appears sufficient for the present purpose:

I. Disorders of the secreting apparatus (of the sebaceous and sweat glands).

II. Disorders specially relating to growth (hypertrophies; atrophies; new formations; pigmentary changes).

III. Inflammatory affections (erythematous; papular; vesicular; pustular; squamous or scaly).

IV. Neuroses (nervous disorders).

V. Parasitic affections (animal; vegetable).

I. DISORDERS OF THE SECRETING APPARATUS.—*Sebor-*

SKIN DISEASES

rhæa is a term applied to describe an accumulation on the skin of excessive fatty secretion mixed up with dirt and forming scales or a distinct encrustation. On the head, where it is commonly seen, it may interfere with the nutrition of the hair and cause partial baldness. A form of this disease occurs in young infants. The main treatment is local, consisting in thorough cleansing of the parts. The crusts may be softened with oil and the affected skin regularly washed with superfatted soap. A weak ointment of salicylic acid in vaseline (3 grains to the ounce) also aids their disappearance. The fatty material frequently accumulates in the sebaceous ducts, giving rise to the minute black points so often noticed on the face, back, and chest in young adults, to which the terms *black-heads* and *comedones* are applied.

Acne is an eruption produced by inflammation of the sebaceous glands and hair follicles. It usually occurs in connection with black-heads. (See ACNE.)

Wens are small cysts produced by local retention of the sebaceous material and overgrowth of gland tissue. (See WENS.)

II. DISORDERS AFFECTING GROWTH.—*Corns* are local thickenings of the skin, generally occurring on the toes, and also on any part exposed to occasional friction and pressure. (See CORNS AND BUNIONS.)

Warts are excrescences from the surface of the skin due to overgrowth of the deeper layers. (See WARTS.)

Ichthyosis consists of a general thickening of the whole skin and marked accumulation of the epidermis, with atrophy of the sebaceous glands, giving rise to a hard, dry, scaly condition, resembling fish-skin.

Alopecia, or baldness, is the loss of hair, which is most commonly a senile change and irremediable, or on the other hand may be premature, occurring either hereditarily or in

connection with some previous constitutional disease (*e.g.* after fevers or other blood poisons), in which latter case it may be only, although not always, temporary. (See BALDNESS.)

Tumors of various kinds form in the skin. They may be of a temporary nature, like wens and warts, or may be *simple tumors*, fatty, fibrous, etc., of the same characters as similar tumors elsewhere, or, especially when situated about the lips and other sites exposed to irritation, may be *epitheliomata* and *rodent ulcers* of malignant nature.

Leucoderma is a change in the pigmentation of the skin, whereby it becomes white in patches, with a tendency to spread and affect almost the whole surface. *Albinism* is an entire absence of pigment from the hair, skin, eyes, etc. The hair is usually white, and the skin exceedingly pale; and the eye has a pinkish appearance.

III. INFLAMMATORY SKIN AFFECTIONS.—*Dermatitis*, or diffuse inflammation, may be due to sunburn, heat, various drugs such as belladonna, bromides, and iodides, poisonous plants, such as poison ivy and Chinese primrose, and irritating substances encountered in various trades. *Erythema*, particularly *erythema nodosum*, is occasionally a congestive condition and consists of spots and patches slightly elevated and of dark-red colour, appearing on the front of the legs and back of the arms in young persons, mostly females. *Erysipelas* is an inflammatory skin affection resembling erythema, though of far severer type. (See ERYSIPELAS.) *Urticaria* or *nettle-rash* is a diffuse redness of the skin, accompanied by wheals of raised and paler appearance, not unlike the effect produced by the sting of nettles or of insects, and attended with great irritation and itching. (See NETTLE-RASH.)

Lichen, an eruption consisting of small, thickly set, and slightly elevated red points, more or less widely distributed over the body, may result

from digestive derangements, and it lasts but a short time. Some forms, however, (*e.g.* *lichen ruber*), are of chronic character and difficult of treatment.

Eczema, one of the most common and important of all skin diseases, consists of an inflammation of the true skin, of catarrhal character, together with the formation of pimples, vesicles, or pustules, attended with more or less discharge, and with itching and other symptoms of irritation. It cannot be regarded as a disease by itself, but is really a symptom denoting the reaction of the skin to various forms of irritation. It may be either acute or chronic, and presents itself in a variety of forms, the surface being sometimes dry, cracked and scaly, in other cases red, swollen and oozing. (See ECZEMA.)

Lupus vulgaris is a disease characterised by the formation in the skin of tubercles, leading to ulceration and destruction of the skin and other tissues in which it exists, and the subsequent formation of permanent white scars. It is due to the tubercle bacillus. (See LUPUS.)

Syphilis may produce eruptions of several kinds. The earliest is in the form of a faint rose-coloured rash; later, red patches covered with white scales may appear; but the chief eruption appearing in the late stage of the disease consists in thickened areas in the skin (*gummata*) which ulcerate, and on healing leave rounded scars with brown pigmented edges. (See SYPHILIS.)

Herpes is an inflammation of the true skin, attended with the formation of isolated or grouped vesicles of various sizes upon a reddened base. (See HERPES.)

Pemphigus consists in large blebs upon a red base.

Impetigo, consisting of small pustules situated upon a reddened base, mostly occurs in children. There is a contagious form of this malady, which passes from child to child, not

uncommonly breaking out as a sort of epidemic in schools. (See IMPETIGO.)

Psoriasis, an inflammatory affection of the true skin, attended with the formation of red spots or patches, which are covered with white silvery scales, may affect any portion of the surface of the body, but is most common about the elbows and knees, and on the head. (See PSORIASIS.)

IV. NEUROSES (*Nervous affections*).—Various disorders of nutrition of the skin occur in persons suffering from organic nervous diseases, such as bed sores, ulcers, etc., but these belong to the symptoms of the several diseases with which they are associated. The most common of the neuroses of the skin is probably *pruritus*, which is an ailment characterised by intense itching of the surface of the body. (See ITCHING.)

V. PARASITIC AFFECTIONS.—*Scabies*, or *Itch*, is a skin affection due to a species of mite. (See ITCH.)

Phthiriasis is an inflamed and irritable condition of the skin, produced by the presence of lice. (See INSECTS.)

Ringworm is a condition produced by vegetable parasites of the nature of moulds. (See RINGWORM.)

SKULL is the collection of flat and irregularly shaped bones which protect the brain and form the face. These number in all twenty-two.

SLEEP is a periodic resting condition of the body, and especially of the nervous system. The nature and cause of sleep is a question that has excited discussion for many centuries, especially as to the part played by the mind in this resting condition.

The amount of sleep suitable at different ages is mentioned under CHILDREN, PECULIARITIES OF. It must be remembered that too much sleep is unhealthy, as well as too little sleep.

Dreams.—The mind, like the vital centres, is probably never completely inactive during sleep, but is constantly receiving slight impressions which produce only a faint and

quickly forgotten sensation. This is borne out by the fact that a sleeper may be awakened, not only by a loud sound or light touch, but by the ceasing of a continuous sound, as when machinery stops. A sleeper is also especially easily awakened by some sound or other sensation that he expects, and, in further proof of this constant wakefulness of the mind, may be mentioned the fact that many people have the power of wakening after having slept for a period which they have previously determined. When the higher intellectual faculties of will and reason have become dulled, but deeper sleep does not at once come on, memory and imagination become increasingly vivid, so that brilliant pictures are presented to the mind. Often these are mingled with misinterpreted sensations from the surface of the body or from disordered internal organs, which serve to give them an unpleasant tinge. For example, dyspepsia following upon a late and heavy meal may give rise to sensations of falling over precipices, of unhappiness, or of other unpleasant experiences which are in part memories of past events. Dreaming is really a form of partial insomnia, and is to be similarly treated.

Night terrors occur in nervous children and are allied to dreaming. The child goes to sleep after a day of unusual excitement or fatigue, or perhaps after partaking of some indigestible material, and in a short time, when sleep should be sound and dreamless, he awakens with a start and in a state of terror.

Somnambulism, or sleep-walking, is also an imperfect form of sleep, in which the muscular apparatus, and the portion of brain controlling it, remain awake though the intellectual faculties are buried in slumber. It is of various grades, some persons singing, talking, or even shouting in their sleep, others flinging about the arms or sitting up, and others, who

SLEEP

suffer in the most aggravated form, rising from bed and going through complicated movements, such as that of climbing from a window.

Paralysed wakefulness is a condition of which people sometimes complain. This is the converse of somnambulism, the person waking from sleep to full consciousness and finding himself unable to make any movement for some time.

Insomnia, or sleeplessness, is a condition that often causes annoyance, and by depriving the person of natural rest produces interference with the full activity during the daytime. When it becomes a habit, it may form a serious menace to the health.

Treatment of disordered sleep.—This varies greatly, depending indeed entirely upon the cause. A warm foot-bath immediately before retiring, a greater amount of exercise during the day, and care with regard to the diet may be sufficient in some of the slighter cases to remedy insomnia. Where any known cause of pain or irritation exists, this must of course be remedied. Headache is not uncommonly a cause of sleeplessness, and the relief of this condition is then requisite, and often sufficient to restore natural sleep. (*See HEADACHE.*) When a mental cause is at the root of the condition, the habit of overstudy, business worry, etc., which was originally responsible for the want of sleep, must be abandoned. Some change of occupation in the later part of the evening, such as reading some simple book or engaging in conversation, often helps to quiet the overworked brain and to deplete its over-filled blood-vessels. In these cases also some easy mental effort, like counting imaginary sheep as one lies awake in bed, is similarly helpful. Cases which resist these simple means often yield to hypnotics. (*See HYPNOTICS.*) In cases where the nervous system is thoroughly run down, treatment of a bracing

SMALLPOX

nature is required. (*See NEURASTHENIA.*)

SLEEPING SICKNESS is a disease occurring among natives and to a less extent among Europeans resident in West and Central Africa, characterised by increasing weakness, lethargy, and a constant tendency to sleep, with gradual emaciation and finally death.

SLEEPY SICKNESS is a popular name for encephalitis lethargica. (*See ENCEPHALITIS.*)

SLING means a hanging bandage for the support of injured or diseased parts. Slings are generally applied for support of the upper limb, in which case the limb is suspended from the neck.

In the case of the upper limb, the sling is made from Esmarch's triangular handkerchief bandage, formed by cutting a yard of calico diagonally from corner to corner into two triangular pieces.

Sling for the forearm is applied as follows: The unfolded triangle is laid with one end over the shoulder of the sound side, the centre of the base at the wrist of the injured limb, and the point of the bandage at the elbow of the injured limb. The other end is carried up in front of the injured limb, over the shoulder, and the two ends are tied behind the neck. The point is finally pinned neatly round the elbow.

Sling for the elbow is applied in much the same way, with this exception, that the point of the triangle is placed under the wrist, while the centre of the base supports the elbow. The bandage is completed by turning the point up over the wrist and pinning it to the part of the bandage above.

SLOUGH means a dead part separated by natural processes from the living body.

SMALLPOX, or **VARIOLA**, is an acute infectious disease characterised by fever and by the appearance on the surface of the body of an erup-

SMALLPOX

tion, which, after passing through various stages, dries up, leaving more or less distinct scars.

Symptoms.—The period of incubation is from about ten to fourteen (usually twelve) days. The invasion is sudden, with shivering, high fever, headache, and often vomiting. On the third day the characteristic eruption begins to make its appearance, and spreads over the face, trunk, and extremities in the course of a few hours. On thesecond or third day after its appearance the eruption undergoes a change—the pimples becoming vesicles filled with a clear fluid. The clear contents of these vesicles gradually become turbid, and by the eighth or ninth day of the disease they are changed into 'pustules' containing yellow matter, with an increase of the fever. The eyes may also be involved in the eruption, to the danger of permanent impairment of sight. On the eleventh or twelfth day the pustules show signs of drying up, and along with this the fever abates. Great itching of the skin attends this stage. The scabs produced by the dried pustules gradually fall off and reddish-brown spots remain, which, according to the depth of skin involved in the disease, leave a permanent, white, depressed scar—this 'pitting', so characteristic of smallpox, being specially marked on the face.

In some outbreaks the type of the disease is much more severe than in others.

Treatment.—In the prevention of smallpox, no measure has been so effectual as vaccination. (See VACCINATION.)

The treatment of cases of smallpox is conducted upon the same general principles as that for the other infectious diseases. The establishment of smallpox hospitals separated as far as possible from populous localities, and the prompt removal of cases of the disease where practicable, as well as the diligent prosecution of vaccination and re-vaccination, are among

SODIUM

the first requirements when an epidemic threatens.

SMELL (see NOSE, DISEASES OF; for bad smell, see DEODORANTS, EUCALYPTUS, PERMANGANATE OF POTASSIUM, etc.).

SMOKING (see TOBACCO).

SNAKE-BITE (see BITES, etc.).

SNEEZING may be caused by the presence of irritating particles in the nose, such as snuff, the pollen of grasses and flowers, etc. It is also an early symptom of colds, influenza, measles, and hay-fever, being then accompanied or followed by running at the nose.

It is relieved by inhalations of menthol.

SNORING is a form of noisy breathing due to sleeping with the mouth open. It can be checked by tying up the jaw and breathing only through the nose, or by turning on the side.

SOAP.—The chief use of soap is, mixed with water, as a cleansing agent. Internally, hard soap is often used to make up the bulk of pills containing very active ingredients. As a purgative enema, soap is used made up into a strong solution in warm water. Soap liniment, better known as 'opo-deldoc', is widely used as a popular remedy for stiffness or sprains.

SODA (see SODIUM).

SODIUM is a metal whose salts are white, crystalline, and alkaline.

SODIUM CARBONATE, commonly known as SODA or WASHING SODA, has a powerful softening action upon the tissues. It is not often used internally, since in large doses it is a corrosive poison, but a solution in warm water is often used as a cleansing agent for the skin, as a lotion to syringe the ear in order to soften and remove hardened wax, and in fomentations for application to rheumatic joints.

SODIUM BICARBONATE, or BAKING SODA, is largely used as an 'antacid' in acidity of the stomach, gout, rheumatism, and other diseases. It is taken in doses of 10 or 20 grains, as a

SOFTENING OF THE BRAIN

rule, or as much as will stand upon a sixpence. The citrate and acetate of sodium are used in a similar manner, though the corresponding potassium salts are more frequently employed.

SOFTENING OF THE BRAIN (*see* APOPLEXY ; BRAIN, DISEASES OF).

SOLARIUM is the term applied to a room enclosed by glass in which sun baths are taken while protection is afforded from the weather. This form of treatment is especially used against tuberculosis.

SOMNAMBULISM means sleep-walking. (*See* SLEEP.)

SORE is a popular term for ulcer (*see* ULCER).

SORE THROAT (*see* THROAT, DISEASES OF ; *and* TONSILLITIS).

SPASM means an involuntary, and, in severe cases, painful contraction of a muscle or of a hollow organ with a muscular wall. Spasms of a general nature are usually spoken of as 'convulsions', spasms of a painful nature are known as 'cramp' when they affect the muscles of the limbs, and as 'colic' when they are situated in the stomach, bowels, or other organs of the abdomen. Spasm of the heart receives the name of 'breast-pang' or 'angina pectoris', and is both a serious and an agonising condition. Spasm is a symptom of many diseases, and further information will be found under ANGINA PECTORIS, ASTHMA, COLIC, CONVULSIONS, CRAMP, DYSPEPSIA, EPILEPSY, LUMBAGO, TETANUS, WHOOPING-COUGH.

SPECTACLES are worn on account of some defect in the refractive (*i.e.* focussing) power of the eye, or owing to the axis of the eye being misdirected (*i.e.* squinting), or simply as a protection from bright light, wind, or dust.

Refractive errors consist of four types : (1) **SHORT-SIGHT**, in which the refractive power of the eye is too strong or the globe of the eye too long from before backwards, so that rays of light from distant objects are brought to a focus in front of the retina, upon which blurred images are

SPECTACLES

therefore formed. Spectacles containing concave lenses are used in order to correct this in viewing distant objects. Children with short-sight have difficulty in following their lessons, because they cannot see clearly maps, figures on blackboards, and other objects at a distance. They should therefore be early provided with appropriate glasses, since the error, if uncorrected, is liable to become more pronounced.

(2) **LONG-SIGHT**, in which the globe of the eye is so short from before backwards, that rays of light from objects close at hand would come to a focus behind the retina and therefore produce blurred images, although the vision for distant objects may be perfect. In this case, convex spectacles are used for near work in order to increase the converging power of the lens of the eye. Long-sighted eyes in school children and students are apt to be inflamed and productive of headache in consequence of the constant overstrain required to focus near objects, such as a printed page, upon the retina. The condition is very apt to pass unnoticed, since, except in extreme degrees of this malformation, the child or student has good vision for distant things. Constantly inflamed eyes, headache, and especially occasional blurring of the print after the eyes have been used for some hours in reading, should attract attention to this condition.

(3) **ASTIGMATISM**, in which the curvature of the cornea is not symmetrical, so that the rays of light in one plane cannot be focussed upon the retina along with those in the plane at right angles to it. Such an eye, accordingly, sees objects, whether they be near at hand or far off, in a distorted manner ; a circle, for example, being seen as an ellipse and blurred at two points opposite one another. For the correction of this error extreme care is necessary. Spectacles have to be fitted in which the glasses, instead of being lens-

SPECTACLES

shaped, consist of a slice from the side of a cylinder and the axis of the cylinder must be set with great care in the spectacle frame. Astigmatism may occur in long-sighted or in short-sighted eyes, or, the eye may be long-sighted in one meridian, short-sighted in the meridian at right angles to it (mixed astigmatism). In such cases, spectacles are provided having a lens on one side of the glass and cylinder-shaped on the other side.

(4) **PRESBYOPIA**, or the condition which is a natural consequence of increasing age, in which the lens of the eye gradually hardens and so loses its power to accommodate itself for the vision of near objects. This condition necessitates that reading, sewing, etc., shall be carried on, after the age of forty or forty-five, at an inconvenient distance, if the details of the work are to be sharply focussed on the retina. The condition is treated by wearing convex glasses for near work, though the eyes remain perfectly good for viewing objects at a distance. Thus it becomes possible for elderly people, aided by spectacles, whose strength is proportioned to their age, to read, sew, etc., at the convenient distance of 12 or 14 inches. People of normal sight are usually benefited by spectacles for near work after passing the age of forty-five, and certainly after fifty, since the effort to accommodate for near vision after this age fatigues the eyes and is productive of headache.

Squinting is usually caused by the excessive efforts made by long-sighted children to accommodate their eyes for near vision. In squints due to this cause the squint is remedied by convex glasses. Many other cases of squint (latent squint) are remedied by wearing prismatic glasses. (See **SQUINTING**.)

Protection of the eyes is afforded usually by glass, tinted grey or black according to the degree of protection from light that is required. The disease in which protection is specially required is iritis.

SPEECH, DEFECTS OF

The forms of spectacles are concave and convex lenses, cylinders, prisms, and plane glasses. The nature of the glass can be told by holding it close to the eye and moving from side to side. If the lens be convex, the objects seen through it appear to move in the opposite direction to that in which the glass travels. If it be concave, they move with the glass. If the glass contain a cylinder, the rate at which objects travel varies as the glass is moved up and down or from side to side. Often a person has to wear one pair of glasses for near, and another pair for distant work, and it is usual to combine these by making the upper half of each glass the lens suitable for distant work, and adapting the lower half of each for near work.

The frame in which lenses are set is important. It should be light, and, for persons who use glasses constantly, the spectacle form is best. For occasional use, some *pince-nez* form of frame is usually more convenient, but great care must be taken, especially if the lenses are strong, that the centre of each lens comes before the centre of the eye. For this reason the best form of eyeglasses is one in which the frame has a rigid bridge and is supported by springs that do not alter the position of the lenses.

SPECULUM is an instrument designed to aid the examination of the various openings on the surface of the body.

SPEECH, DEFECTS OF.—The power of speech is gained in early life by children hearing the sounds made by others and mimicking them, so that the centres for speech in the brain are intimately connected with those concerned in the sense of hearing.

MUTISM, or the entire absence of the power to speak, may be due to various causes, the most effectual being some mental deficiency which denies to the child sufficient intelli-

SPEECH, DEFECTS OF

gence to mimic the actions of those around him. In other cases the child seems to be quite intelligent, but, owing apparently to some defect in the nervous control of the voice and speech organs, or in these organs themselves, he is unable to make intelligible sounds. A very common cause of mutism is complete deafness present at birth, or caused by some ear diseases in early childhood. The child in this case cannot learn to speak, simply because he cannot hear, but, if properly educated, he can be taught to speak fluently and to understand what is said by watching the lips and throat of others. (See DUMBNESS.)

STAMMERING is a bad habit of speech due to failure of the different parts of the speech mechanism to act together. (See STAMMERING.)

TWANGS of various kinds are assumed very easily, and, indeed, often unconsciously from those around. The ease with which the exact pronunciation of a foreign tongue is picked up by a person living in the country in question is well known. Many differences between different languages are to be explained by slight differences in shape between the speech organs of different races. Other differences are to be explained by different habits of opening the lips and mouth in various tribes of the same stock, due, perhaps, to external conditions, such as climate. Such minor peculiarities in speech as 'burrs' and 'lisps' are due to peculiarities in the action of the tongue or palate, while the deformities of tongue-tie and cleft-palate are accompanied by still greater defects of speech. When the nose is blocked by any condition, such as cold in the head or polypus, the pronunciation of the resonants *m*, *n*, and *ng* is interfered with, these being heard as *b*, *d*, and *g* respectively.

APHASIA is a condition in which various forms of inability to speak, or to understand speech, come on

SPINE, DISEASES AND INJURIES

late in life as the result of brain disease. (See APHASIA.)

APHONIA, or loss of voice, causes speaking to be carried on in a whisper. It is usually either due to some disorder of the vocal cords, as in the laryngitis which may form part of a cold (see THROAT DISEASES), or is a symptom of hysteria. It is generally of short duration.

SPINAL COLUMN, also known as the SPINE, CHINE, BACKBONE, and VERTEBRAL COLUMN, forms an important part of the skeleton, acting both as the rigid pillar which supports the upper parts of the body and as a protection to the spinal cord and nerves arising from it. The spinal column is built up of a number of bones (33 in the child and 26 in adult life) placed one upon another, which, in consequence of having a slight degree of turning-movement, are known as the 'vertebræ'. The possession of a spinal cord supported by a vertebral column distinguishes the higher animals from the lower types, and gains for them the general name of 'vertebrates'. Of the vertebrates, man alone stands absolutely erect, and this erect carriage of the body gives to the skull and vertebral column certain distinctive characters.

SPINAL CORD is the lower portion of the central nervous system which is situated within the spinal column. Above, it is continuous with the medulla of the brain. Below, the spinal cord extends to about the upper border of the second lumbar vertebra, where it tapers off into a fine thread known as the 'filum terminale', that is attached to the lower end of the spine. The spinal cord is thus considerably shorter than the spinal column, being only 15 to 18 inches in length. In its course from the base of the skull to the lumbar region the cord gives off thirty-one nerves on each side, which run forwards between the vertebrae.

SPINE AND SPINAL CORD, DISEASES AND INJURIES OF.—These

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are considered together, because the chief danger of interference with the spinal column lies in the risk of injury to the spinal cord and nerves. Only some of the chief diseases will be dealt with.

LATERAL CURVATURE OF THE SPINE, or **SCOLIOSIS**, consists chiefly in bending of the spine over to one side, though, in consequence of the vertebræ being broader in front than behind, this is accompanied by a certain amount of twisting. The shape of the chest becomes in consequence markedly altered, the ribs on one side projecting behind, and causing the shoulder-blade to be very prominent, while on the other side the chest is flattened. (*See CHEST DEFORMITIES.*) The shoulder of the bulging side is usually considerably elevated. This condition may be started by slight injuries of the spine, by rickets in early life, or by diseases in the chest, such as pleurisy, which cause partial collapse of one side. But by far its most common occurrence is in young persons of feeble muscular power, especially in rapidly growing girls from about twelve to sixteen years of age, who adopt some bad habit of posture. Such a habit may consist in crossing one leg over the other always in sitting, leaning constantly on the same elbow at lessons, standing habitually with the weight of the body on one foot, or frequently carrying a heavy burden on one arm.

Treatment consists in avoiding the bad postures mentioned above, and in making sure that the general health is maintained as high as possible by tonics, fresh air, and exercise. Above all, some special form of gymnastics, combined sometimes with massage, is advisable in order to strengthen the feeble muscles of the back.

ANGULAR CURVATURE OF THE SPINE is a very much more serious condition. It not only pro-

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duces more evident deformity, but many cases are accompanied by a certain degree of pressure upon the spinal cord. The condition is also called *Pott's curvature*. This deformity is produced in the great majority of cases by tuberculosis; and, the body of one or more vertebræ crumbling away, the spinal column curves sharply forwards, so that the spinous processes stand out very prominently on the back. The symptoms are not at all well marked in the early stages. There is a general loss of health and strength, and the person becomes easily tired. The affected part of the spine is tender when pressure is made on the back, and the child holds himself stiffly. If the neck be diseased the head is not turned from side to side, and the child often supports the chin on his hand. If the back be the part concerned, the child holds himself very erect, and when he wishes to pick something off the floor goes down upon his knees rather than bend the back. When the lumbar region of the spine is diseased a frequent result is the formation of a psoas abscess which burrows towards the back or into the groin.

Treatment applicable to tubercular disease affecting any other organ, *e.g.* good food, tonics, and fresh air, is most important. In an early case, the patient must rest for many months, and in more advanced cases some form of mechanical support is in addition necessary. After the disease has been arrested and the bone has healed up, a considerable amount of permanent stiffness and deformity result.

Excellent results have lately been obtained from heliotherapy. The back is exposed for several hours daily to the sun's rays, while the patient lies supported on a pillow under the stomach and upon his elbows. Not only does this position relieve pressure upon the diseased part of the spine and gradually

correct the deformity, but it allows the patient, during the long period necessary for treatment, to carry on light forms of work in perfect comfort.

CARIES OF THE SPINE is the condition of tubercular disease leading to angular curvature (*see above*).

COMPRESSION OF THE CORD may arise from various causes. The seriousness of most diseases affecting the spine is, in fact, measured by their tendency to interfere with the spinal cord. This condition may be caused suddenly by a severe crush or blow upon the back, which produces a fracture of the spine with displacement of the fragments. Or it may come on slowly, and is then in the great majority of cases due to Pott's disease (*see above*).

Symptoms include interference with sensation below the level of compression; rigidity and paralysis of the lower limbs more or less complete; interference with the functions of the bladder and rectum, and a special tendency to bed sores in the paralysed parts.

For treatment see PARALYSIS.

MYELITIS, or inflammation situated in the spinal cord itself, may be of an acute or chronic nature, and gives rise to symptoms much resembling those of compression though unaccompanied by pain. (*See MYELITIS.*) A special form of myelitis (polio-myelitis), affecting only the grey matter of the cord, is a frequent disease of young children, and causes the symptoms known as 'infantile paralysis'. (*See PARALYSIS.*)

SCLEROSIS is a very chronic condition of the cord, in which certain parts become increasingly hard in consequence of a disappearance of the white nerve-fibres and their replacement by an overgrowth of the connective tissue of the cord. (*See LOCOMOTOR ATAXIA and DISSEMINATED SCLEROSIS.*)

PROGRESSIVE MUSCULAR ATROPHY is the chief member of a group of diseases whose main charac-

teristic is loss of power and muscular wasting, due to a gradual degeneration in the grey matter of the spinal cord and brain. (*See PARALYSIS.*)

SPINA BIFIDA is a defect in development affecting the spinal column, and in severe cases also the spinal cord, in the lumbar region. Surgical treatment is in some cases very satisfactory in its results; though the majority of children thus affected are liable to convulsions and do not reach mature years.

INJURIES TO THE SPINE AND CORD are of various grades of severity. *Sprains* of the back due to a twist and leading to tearing of muscles, ligaments, etc., and to deep-seated effusion of blood, may be productive of long-continued pain and even of a considerable amount of paralysis. This is probably in most cases due to some injury of the spinal nerves, but the symptoms pass off in general with rest and time. *Fracture of the spine* has been mentioned above under the heading of Compression. *Concussion of the cord* is a term which includes a number of possible injuries that may have been inflicted upon the cord by severe jarring or shaking of the body. Owing to the frequency with which this condition follows upon railway accidents, it has also received the name of 'Railway Spine'.

SPIRIT is a strong solution of alcohol in water. Among the most commonly used spirits are spirit of chloroform (also known as chloric ether), sweet spirit of nitre (spiritus etheris nitrosi), aromatic spirit of ammonia (sal volatile), spirit of ether, spirit of Cologne (eau-de-Cologne), spirit of camphor, and spirit of various volatile oils such as peppermint, cajuput, juniper, lavender, rosemary, and anise. Methylated spirit (also known as wood naphtha or wood spirit) is distilled from wood. When taken internally this is a dangerous poison producing neuritis with great readiness, and especially neuritis of

the optic nerves which may result in blindness. Mineralised or denatured methylated spirit is one to which crude pyridine and mineral naphtha have been added in small proportions, together with a minute quantity of methyl violet for colouring, in order to prevent its being drunk.

The term spirit is also used popularly in a loose application to various active substances, *e.g.* 'spirit of turpentine' (oil of turpentine), 'spirit of hartshorn' (ammonia in water), 'spirit of nitre' (nitric acid), 'Mindererus spirit' (liquor ammonii acetatis), and 'spirit of salt' (hydrochloric acid).

Externally, plain spirit or eau-de-Cologne is used to sprinkle on the skin or to apply on lint, as an evaporating lotion for its cooling and soothing effect. (*See LOTIONS.*) Spirit is also used to harden the skin for the prevention of bed sores and foot soreness. For the internal uses of plain spirit see **ALCOHOL**.

SPITTING is a symptom of various diseases of the mouth, air passages, and lungs. (*See EXPECTORATION and CONSUMPTION.*) The habit of spitting on the ground is not only filthy but unhygienic, because the dried sputum may be responsible for carrying several diseases.

SPLEEN is an organ deeply placed in the abdomen. Its disorders attract comparatively little attention, either because they are rare or because the difficulty of examining the organ allows them to pass unrecognised.

The spleen lies behind the stomach, high up on the left side of the abdomen, and corresponds to the position of the 9th, 10th, and 11th ribs, from which it is separated by the diaphragm. It is a soft, highly vascular, plum-coloured organ, and has a smooth surface, being almost completely covered by peritoneum.

SPLEEN, DISEASES OF.—Since the functions of the spleen are hardly known at all, it is natural that little

has been discovered regarding the diseases to which it is liable. In certain diseases associated with marked changes in the blood, such as leucocythæmia, waxy disease, and malaria, the organ becomes chronically enlarged. In some of the acute infectious diseases, the spleen becomes congested and acutely enlarged; for example, in typhoid fever, anthrax, and plague. The condition, however, which most frequently attracts attention is rupture of the spleen. This accident may occur, like rupture of other internal organs, in consequence of extreme violence, but in malarious countries, where many people have the spleen greatly enlarged and softened as the result of malaria, rupture of this organ occurs now and then as the result of some very trivial blow upon the left side.

SPLINTS are supports for an injured or wounded part. They are most commonly employed in cases where a bone is fractured, and consist then of some rigid substance designed to take the place of the broken bone in maintaining the shape of the limb, as well as to keep the broken ends at rest and in contact, and thus to ensure their union. Splints are most commonly made of wood either shaped to the limb or consisting merely of strips of wood about the width of the injured limb, and carefully padded with wool or similar soft material. Splints are also made of metal, poroplastic felt, leather, and cotton stiffened with plaster of Paris, as well as other materials. Splints may be improvised for first-aid out of walking-sticks, rifles, broom-handles, branches, folded-up newspapers, and in fact anything of suitable length and rigidity. (*See FRACTURES.*)

SPOTTED FEVER is a popular name for cerebro-spinal meningitis.

SPRAINS are injuries in the neighbourhood of joints, consisting usually in tearing of a ligament with effusion of blood. (*See JOINTS, DISEASES OF.*)

SPRAYS (*see INHALATIONS*).

SPRUE, or *PSILOSIS*, is a dangerous form of chronic catarrh or inflammation of the mucous membrane of the alimentary canal. It is found throughout the greater part of the Tropics, but is especially common in South China, the Straits Settlements, Ceylon, the West Indies, and Southern United States.

SPUTUM means material spat out of the mouth. It may consist of saliva from the mouth, of mucous secretions from the throat or back of the nose, but is generally expectorated by coughing from the lower air passages. (*See EXPECTORATION.*)

SQUILL is the sliced bulb of a plant from the shores of the Mediterranean. It contains several substances which exert an irritating, or, in small doses, a stimulating effect upon the kidneys and the mucous membrane of the stomach and bronchial tubes.

SQUINTING is a condition in which the two eyes do not look in the same direction at one time. The movements of the eyeballs depend upon the action of six muscles, four being straight and two oblique. Of these muscles the outer and inner straight (*recti*) muscles turn the eye from side to side and enable the two eyes to act together. The external rectus muscle and the internal rectus muscle are therefore the most important of the six, and defects connected with them produce inward or outward squint. Other squints upwards or downwards are occasionally, though only rarely, met with.

Treatment.—It is highly important that children who show a squint should have the eyes examined, for the great cause is an error of refraction that can be remedied by glasses. As soon as an occasional squint appears, treatment is required, but if the squint becomes limited to one eye permanently, that eye has already deteriorated in power of vision. The squint can often be remedied by glasses, but if it has lasted a long time, it is generally necessary to perform an operation for the division or shorten-

ing of one of the eye muscles. This operation is very slight and almost painless, but it requires great nicety of judgment and execution.

STABS (*see WOUNDS*).

STAMMERING is a condition in which a person hesitates in the act of speaking, being unable for a time to pronounce certain syllables or repeating the same syllable over and over. For example, in pronouncing such a word as 'Peter' the person may at the beginning of the word be unable to sound the 'P' for a time, remaining with the mouth open, or with the lips compressed, and often making vigorous movements with the hands or feet in the fruitless endeavour. Or he may repeat this sound, pronouncing 'Pe-pe-peter', and being unable for a time to pass off the 'P' to the rest of the word. The latter variety of stammering is generally called 'stuttering'.

Causes.—Stammering is not due to any defect in the brain or in the speech organs, and may be described as a functional disease, or a bad habit, or a sign of shyness. It begins usually in childhood, and is a practice which one child readily learns from another, just as any peculiarity of speech in one person is liable to be unconsciously mimicked by those around. The actual cause of the stammering is a failure of the various parts concerned in speech to act together. The speech mechanism consists of three parts, and may be roughly compared to an organ. The chest corresponds to the bellows of the organ, the larynx, where the voice sounds are produced, to the keyboard and pipes of the organ by which the different notes are sounded, and the changes in the mouth effected by the tongue, palate, lips, etc., resemble the stops of the organ which modulate the notes. Just as these three parts of the organ must be worked in unison for the production of perfect music, so the three parts of the speech apparatus must work together. In stammering there is some error; either the

mouth does not shape itself at once to produce the necessary consonants when the stream of air is turned on and the larynx thrown into action, or the mouth is rigidly held in the proper attitude but no laryngeal note is sounded.

Treatment.—This consists almost entirely of education in the matter of proper voice and speech production. The stammerer, if a child, should in the first instance be removed from the others from whom he is learning to stammer. Later on, the cure depends upon the amount of care with which the person strives to regulate his vocal organs. One of the most important points for the stammerer to recognise is the difference between those syllables and letters which are produced with full voice and those which have little voice. For example, in the words 'Peter' and 'Beater' the initial letter is hardly sounded in the first, the stress being thrown upon the *e*, while in 'Beater' the *B* receives its full sound. The stammerer's difficulty in many cases arises from a reversal of this process, and disappears when he learns to recognise this difference. Sometimes, before commencing a course of treatment with a view to cure, the stammerer does well to remain absolutely silent for a week, with the view of losing his faulty method of speech. A perfect cure is only to be obtained by the practice of deliberate, melodious speech, as for example by frequently reading aloud.

STARCH is a substance belonging to that group of carbohydrates known as the amyloses. It is changed largely into dextrin when exposed to a considerable degree of dry heat, as in toasting bread; and a similar change into dextrin and malt sugar takes place under the action of various ferments such as that of the saliva. Starch forms the chief constituent of the carbohydrate foods (*see* DIET), and in the process of digestion the above-mentioned change takes place in order to prepare it for absorption.

Starch is used externally to form a poultice for softening the skin in skin diseases. (*See* POULTICES.) It is also used as a constituent of dusting powders for application to chafed or irritable areas of the skin. (*See* CHAFING.) Starch enema is administered in inflammatory conditions of the bowel. (*See* ENEMA.)

STARVATION (*see* FASTING).

STASIS is a term applied to stoppage of the flow of blood in the vessels or of the food materials down the intestinal canal. Intestinal stasis, which may be due to weakness of the muscle of the bowel or to the presence of adhesions, kinks, and other similar conditions, results in constipation and is often blamed for a variety of symptoms of ill-health attributed to poisoning with substances resulting from decomposition, which are absorbed into the blood.

STERILISATION means the process of rendering various objects which come in contact with wounds, various foods, etc., free from microbes. This may be effected in many ways, and different methods are used in different cases, for it is evident that processes applicable to clothing or to a room may be quite unsuited for the sterilisation of food.

The manner of sterilising bedding, furniture, etc., after contact with a case of infectious disease, is given under DISINFECTION.

Milk is the chief article of food that calls for special sterilisation. (*See* PASTEURISATION.) With regard to other foods, ordinary cooking has this for one of its chief objects.

STERNUM is another name for the breast-bone.

STETHOSCOPE is an instrument used for listening to the sounds produced by the action of the lungs, heart, and other internal organs.

STICKING PLASTERS (*see* PLASTERS).

STIFFNESS is a condition which may be due to a change in the joints or muscles, or to the influence of the

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nervous system over the muscles of the part affected. Stiffness is associated with various forms of rheumatism. (*See RHEUMATISM.*) As it affects the joints, it is treated under **JOINTS, DISEASES OF.**

STIMULANTS are drugs and other agents employed to call forth special powers of the body or of individual organs in order to effect some special purpose or to offer resistance to some acute attack of disease.

Since the action of various stimulants depends upon very diverse principles, the term is little used in medicine, and names are employed indicating more closely the immediate effect. For drugs which stimulate the intestines, see **PURGATIVES**; for those that stimulate the kidneys see **DIURETICS**; and for those that increase the activity of the skin secretion see **DIAPHORETICS**. Many substances, such as aromatics, spices, and bitters, stimulate the function of the stomach. Various substances stimulate a flagging heart, such as ammonia, alcohol, ether, volatile oils, and digitalis, and are used when this organ shows signs of sudden failure; while these and other substances act upon the nervous system so as to produce for a time a general sense of well-being, and are therefore known as general stimulants, *e.g.* alcohol, ether, tea, and coffee.

STINGS (*see BITES*).

STITCH is a popular name for a sharp pain in the side. It is generally due to cramp following unusually hard exertion (*see CRAMP*), but care must be taken that this trivial condition is not taken for pleurisy or for a fractured rib.

STOMACH.—The stomach is a dilated portion of the alimentary canal, which in man has a shape somewhat resembling that of a pear. The larger end, known as the 'fundus', lies in the hollow of the left side of the diaphragm, and at one side of this is the opening from the gullet. The greater part of the stomach, into

STOMACH, DISEASES OF

which the gullet opens, is known as the 'cardiac' part, while the lower and narrower portion is known as the 'pyloric' part. The two openings into and out of the stomach are known as the cardia and the pylorus. The stomach is slightly flattened from before backwards, and the two edges are known as the 'lesser curvature', which runs from one opening to the other direct, and the 'greater curvature', which sweeps round the fundus from the cardia to the pylorus.

The part played by the stomach in digestion consists in storing, warming, and softening the food, and then in passing it on in small quantities to the intestine, where the more important digestive processes that prepare it for absorption take place. The gastric juice contains hydrochloric acid and a ferment pepsin, which soften the food. The movements of the stomach are a series of slow waves which take place in health without causing any sensation. In irritable conditions of the stomach they become spasmodic and painful.

STOMACH, DISEASES OF.—The majority of these exhibit, as their most marked and sometimes their only feature, the symptoms of dyspepsia (*see DYSPEPSIA*).

ACUTE GASTRITIS, or **ACUTE CATARRH**, is a passing condition of pain and sickness due to errors in diet, chills, etc. It may be treated by a purgative, the application of a mustard leaf to the pit of the stomach, and abstinence from all food save a little milk and water for a day or two.

CHRONIC GASTRITIS, or **CHRONIC CATARRH**, may arise after repeated attacks of the acute form or may come on independently. It is of several types. The result of the chronic irritation of the gastric mucous membrane may be an excessively acid gastric juice, which gives rise to an acid dyspepsia. (*See DYSPEPSIA.*) After a long period of irritation, wasting of the secreting structures of the stomach may be

produced, and there is then little or no secretion of gastric juice.

ULCER OF THE STOMACH, GASTRIC ULCER, or PERFORATING ULCER, is of frequent occurrence, and is a serious disease.

Symptoms.—First among the symptoms is *pain*, which is markedly increased after food. This pain is situated either in front, at the lower end of the breast-bone, or frequently behind, about the middle of the back. It is often severe, and is usually accompanied with much tenderness to touch, and also with a sense of oppression and inability to wear tight clothing. The pain is largely due to the spasmodic contractions of the stomach set up by the presence of the food. Cases are, however, occasionally met in which there is no complaint of pain. Accompanying the pain there is frequently *vomiting* very soon after the food is swallowed which tends to relieve the pain and discomfort. *Vomiting of blood* (hæmatemesis) is a frequent symptom. It may show itself either to a slight extent, and in the form of a brown or coffee-like mixture, or as a copious discharge of pure blood of dark colour and containing clots. Blood is also found mixed with the discharges from the bowels, rendering them dark and 'tarry'-looking. The general condition of a patient with gastric ulcer is as a rule that of ill-health, showing pallor, more or less wasting, and debility.

The course of a case of gastric ulcer is very variable. In most instances recovery is rapid. In others, however, the disease is chronic, lasting for months or years, and incomplete healing may take place and relapses of the symptoms occur from time to time.

Occasionally, though rarely, the disease proves fatal by sudden hæmorrhage, or by perforation of the stomach and the escape of its contents into the peritoneal cavity setting up peritonitis or causing severe shock, and followed,

as a rule, by death within two days unless operative measures be adopted immediately. Should the stomach become adherent to another organ, or be deformed by the scar of the ulcer, a permanent condition of dyspepsia may result, due to interference with the natural movements of the stomach during digestion.

Treatment.—Most important is the careful adjustment of the diet. Milk forms the most suitable food, and while there may be instances in which it fails to agree, even when mixed with lime-water or previously boiled, these are comparatively few. Milk and cream mixed in equal parts are particularly well borne and should form the staple of the patient's diet for several weeks or months. The patient is kept at rest in bed for two or three weeks, and for the first week takes 3 ounces of the milk and cream mixture every hour or 6 ounces every two hours, during the day. Alkaline powders containing magnesia and soda, or carbonate of lime and soda, taken after every meal, help to lessen the acidity of the stomach and promote healing of the ulcer. Towards the end of the first week the patient may receive in addition to the milk and cream, one soft-boiled egg in the forenoon and 3 ounces of porridge or boiled rice in the afternoon. Later another egg is added and 3 ounces of some cereal food are given three times in the day. About the end of the third week the milk with cream is reduced, and he is allowed food, such as eggs, toast, cream soups, mashed potatoes, custards, jellies, whipped cream, and cooked fruits. Subsequently creams of fish, chicken, etc., are allowed. Whatever food is given, the quantity, the intervals between the times of administration, and the temperature demand careful attention. In severe cases, where the presence of any food in the stomach gives rise to much suffering or to hæmorrhage, nourishment by the bowel is had recourse to, and if the

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food be given in this way for a time, the complete rest thus afforded to the stomach is of the utmost value in allowing the ulcer to heal. The usual type of food given in this way consists of glucose in saline solution. Of medicinal remedies, the most serviceable are large doses of bismuth, with which it may be necessary to conjoin small doses of morphine or of hydrocyanic acid for the relief of pain.

CANCER OF THE STOMACH is by far the most common form of cancerous disease. It occurs for the most part in persons at or after middle life, about the age of fifty-two, and in both sexes almost equally, though at middle life it is more common in men. Hereditary tendency may sometimes be traced.

The symptoms of this disease are in many instances so indefinite as to render the diagnosis for a long time uncertain. They are mostly those of dyspepsia, with more or less pain, discomfort, and vomiting, particularly after meals. The patient loses flesh and strength, and soon comes to acquire the cachectic aspect commonly associated with cancer. (*See* CANCER.) The diagnosis is rendered all the more certain when, as is frequently the case, a tumor can be detected on examination over the region of the stomach, but where no such evidence is obtained, the nature of the disease is left to be made out by the age of the patient, by absence of free hydrochloric acid from the gastric juice, by progressive loss of weight, and by X-ray examination. Cases of cancer of the stomach advance with more or less rapidity to a fatal termination. In most instances death takes place in from six to twelve months. The treatment can often be only palliative, but much relief may be afforded by a careful attention to diet in which the patient receives only light and semi-fluid materials, by the treatment applicable to dilatation of the stomach, by the use of morphine and other drugs which relieve pain. In early cases an opera-

STOOLS

tion can sometimes be performed by which the disease is completely removed.

DILATATION OF THE STOMACH may occur without giving rise to any symptoms, the person in question being simply possessed of a gastric organ of more than usual capacity.

The condition may also arise in consequence of weakness of the muscular wall of the stomach as the result of any chronic wasting disease, such as consumption or general enfeeblement of nervous energy brought on by overwork. The dilatation also may follow upon a downward displacement of the stomach which is an inborn peculiarity of certain persons aggravated by a bad habit of posture (*gastroptosis*). Such a defect gives rise to a minor degree of dilatation, the stomach being less active in its movements, and heavy meals being retained in it for many hours or even several days. More common as a cause, however, is narrowing of the outlet from the stomach in consequence of the scar of an old ulcer, or owing to a cancer.

Symptoms.—The symptoms of dilatation have been mentioned under the heading of **DYSPEPSIA**.

Treatment.—This is mentioned under **Fermentative Dyspepsia** in the article **DYSPEPSIA**.

STOMACH TUBE is a soft rubber tube with rounded end, and usually about 30 inches in length, which is used for drawing off the contents of the stomach with the view of chemically testing them, or in order to wash out the stomach when it contains some poisonous material, or when it is dilated and filled with fermenting food.

STOMATITIS means inflammation of the mouth. (*See* MOUTH, DISEASES OF.)

STONE (*see* **BLADDER, DISEASES OF**; **GALL-STONES**).

STOOLS consist of the remainder of the food after it has passed through the alimentary canal and been sub-

jected to the action of the digestive juices, and after the nutritious parts have been absorbed by the intestinal mucous membrane. The stools also contain various other matters, such as pigment, derived from the bile, and large quantities of bacteria. The stools are passed once daily by most persons, but infants, who are fed frequently, have several evacuations of the bowels in twenty-four hours. To some persons the habit of opening the bowels only once or twice a week seems to be quite natural, though such cases are not common.

The *amount* of the stool passed varies considerably, being roughly about 5 ounces, or about one-eighth of the daily food, but when diarrhœa is present, and there is much fluid in the stool, it is increased in amount, whilst in constipation it is diminished and hardened.

The *colour* of the stools is naturally a dark brown. This colour may be changed to green by the action of certain bacteria when decomposition is proceeding to a greater extent than usual in the bowels, and a deep green colour is also produced by some vegetables, such as spinach. White stools, having an appearance like that of clay or putty, are found in cases where the outlet of bile into the small intestine is stopped, and where jaundice is consequently present. When an excess of fat is taken in the food, as in the case of children fed on great quantities of cream, the digestive organs are unable to deal with it, and much of it is passed in the stools, giving the stools in these circumstances also a whitish colour. Black or slaty-grey stools are produced when certain drugs are taken, as, for example, iron and bismuth; and a tarry blackness known as 'melæna' is sometimes imparted to them when bleeding takes place from the stomach. Bright yellow stools are produced in diarrhœa, when the bile is passed almost unchanged, and a similar colour is caused by rhubarb,

senna, and some other drugs. Mucus in the stools, whether in strings, or mixed with the food remnants, or in the form of membranes coating the hardened stools, is almost always a sign of irritation or inflammation in the mucous membrane low down in the bowel (colitis). Red blood in the stools signifies some diseased condition situated near the lower end of the bowel, such as piles.

Incontinence of the bowels, or inability to retain the stools, is found in several diseases of a prostrating nature in which the muscles, that naturally keep the bowel closed, relax. It is also a symptom of disease in or injury to the spinal cord.

Pain at stool is a very characteristic symptom of a 'fissure' at the anus or of inflamed piles, and in such cases is of a very sharp nature. Pain of a duller character associated with the movements of the bowels is often caused by inflammation in the other pelvic organs.

CONSTIPATION and DIARRHŒA have been considered under separate headings.

STOUTNESS (see CORPULENCE).

STRAMONIUM is the leaf of Jamestown weed. It contains an alkaloid almost identical with atropine upon which its action depends. The best-known use of the drug is in asthma-powders intended for burning.

STRANGULATION is the term applied to the stoppage of circulation which sometimes occurs in a hernia, owing to the pressure caused by the edges of the opening through which the affected organ protrudes. A strangulated hernia is an extremely dangerous condition, demanding immediate operation with the object of relieving the constriction.

STRANGURY is the name given to a condition in which there is constant desire to pass water, accompanied by a straining sensation, though only a few drops can be voided. It is a symptom of inflammation situated in

STREPTOCOCCUS

the kidneys, bladder, or urinary passages.

STREPTOCOCCUS is the name given to a variety of micro-organism which under the microscope has the appearance of a string of beads. It is responsible for erysipelas and other virulent forms of inflammation.

STRICTURE means a narrowing in any of the natural passages of the body such as the gullet, the bowel, or the urethra. It may be due to the development of some growth in the wall of the passage affected, or to pressure upon it by such a growth in some neighbouring organ, but, in the majority of cases, a stricture is the result of previous ulceration on the inner surface of the passage, followed by contraction of the scar. (*See* **INTESTINE, DISEASES OF**; **THROAT, DISEASES OF**; **URETHRA, DISEASES OF**, etc.)

STROKE is a popular name for any suddenly developed malady leaving permanent consequences behind it. The term is generally applied to apoplexy. (*See* **APOPLEXY**.)

STROPHANTHUS is the seed of an East African climbing plant, from which the natives made Kombé arrow-poison. From these seeds an active principle, strophanthin, can be separated, and upon this substance the activity of the drug depends. It increases the contractile power of all involuntary muscles throughout the body, but especially of the heart. Its action upon the heart is similar to that of digitalis.

STRYCHNINE is an alkaloid derived from *nux vomica*, the seed of an East Indian tree, as well as from the seeds of several other closely allied trees and shrubs. It is a white crystalline body possessed of an intensely bitter taste. Strychnine in small doses is one of the most widely used of stimulating drugs; although in larger amounts it is a dangerous poison.

If an overdose of strychnine has been taken, an emetic should be

SUGAR

given at once. Later large doses of chloral help to check the convulsions that the strychnine causes.

STUPE is the name applied to a hot fomentation with turpentine sprinkled on it. (*See* **FOMENTATIONS**.)

STUTTERING (*see* **STAMMERING**).

STYE, or **STY** (*see* **EYE, DISEASES OF**).

STYPTICS are applications which check bleeding. Among them may be mentioned ice; hot water at 120° Fahr. if brought directly in contact with the bleeding surface; perchloride of iron; acetate of lead and Goulard's water; nitrate of silver; sulphate of copper; sulphate of zinc; alum; tannin; hazeline; ergot; adrenalin.

SUBCLAVIAN is the name applied to a large artery and vein which pass to the upper arm between the collar bone and the first rib.

SUCKLING (*see* **INFANT-FEEDING**; **BREASTS, DISEASES OF**).

SUFFOCATION (*see* **ASPHYXIA and CHOKING**).

SUGAR is a substance containing the elements carbon, hydrogen, and oxygen, and belonging therefore to the chemical group of carbohydrates.

Grape-sugar, or glucose, is found in various kinds of fruit, and is the form of sugar produced by the tissues and excreted in large amount by the kidneys in diabetes.

Cane-sugar is very widely distributed through the vegetable kingdom, though it is specially plentiful in the juice of the sugar-cane, beet-root, and maple. Cane-sugar is a valuable food, being utilised in the production of heat and energy, though it is also to a certain extent a tissue-builder so far as fat is concerned. It is to be avoided therefore by persons who tend to corpulence, as well as by diabetics.

Milk-sugar is found in milk, and it is to the fermentation of this sugar and consequent production of lactic acid by certain bacteria that the souring of milk is due.

Malt-sugar is produced by the

SUGAR OF LEAD

action of the ferment diastase upon the starch contained in barley.

SUGAR OF LEAD is another name for acetate of lead.

SUGGESTION THERAPY (*see PSYCHOTHERAPY*).

SUICIDE (*see under INSANITY*).

SULPHATES are salts of sulphuric acid, and their action and uses vary much according to the metal with which the acid is combined. The sulphates of iron (green vitriol), zinc (white vitriol), and copper (blue vitriol), have a powerful astringent action; while the sulphates of sodium, potassium, and magnesium (Epsom salts), are used as saline purgatives.

SULPHONAL is an artificially prepared substance which is white, odourless, tasteless, and dissolves readily in warm water or in alcohol. It acts as a hypnotic, and the usual dose is about 20 grains.

SULPHUR is a non-metallic element which enjoys a wide use both in prescriptions and in domestic medicine.

Sulphur is burned in order to produce sulphurous acid gas, which is widely used as a disinfectant (*see DISINFECTION*). Externally, sulphur ointment is one of the best remedies against the minute parasite that is responsible for the itch; and milk of sulphur is used in lotions for acne on the face. Sulphur is also used in baths for its stimulating action on the skin in cases of skin disease, rheumatism, etc. Internally, sulphur is a time-honoured remedy for constipation, in doses of a teaspoonful or thereabout made into a paste with treacle. It may be used for the same purpose in the more palatable form of lozenges, several of these being taken at one time, and has a gentle laxative action. In old persons who suffer from rheumatism and who are liable to constipation and to bronchitis, sulphur is a specially useful remedy, and has been long used in combination with various anti-rheumatic drugs in the confection known

SUNBURN

as 'Chelsea Pensioner.' A similarly beneficial action is obtained from the use of vegetables containing large quantities of sulphur, such as lentil soup or boiled onions.

SULPHURIC ACID, or OIL OF VITRIOL, is, in its undiluted state, one of the most powerful of the mineral acids. It is a heavy, colourless liquid of oily consistence and is largely used in various manufacturing operations, so that poisoning by sulphuric acid is not uncommon. It chars any organic substance with which it is brought in contact, and acts as a violent corrosive poison.

For treatment of poisoning, see the table under POISONS.

SULPHURIC ETHER is a name frequently applied to the ether used for anæsthetic purposes, because sulphuric acid is employed in its preparation. (*See ETHER*.)

SULPHUROUS ACID is a gas derived from burning sulphur. It has an extremely pungent odour and strong disinfectant power.

SUMMER DIARRHŒA (*see DIARRHŒA and INFANT-FEEDING*).

SUNBURN includes the various effects produced upon the skin by the sun's rays. Similar effects are produced by exposure to the heat of furnaces, and also on the skin of those who are exposed for long periods close to electric arc lamps or X-ray apparatus. The effect produced on the skin is attributed by some entirely to heat, by others to the chemically active rays. The actual changes vary greatly in different individuals, fair-haired, delicate, thin-skinned people suffering to a much greater extent, as a rule, than the strong and swarthy.

Symptoms.—In its simplest form sunburn consists in the development of dark pigment, which gives the skin a brown hue and acts as a natural protection from the heat rays. In a severer form there are marked flushing of the skin (erythema), tingling, itching, and finally peeling off of the cuticle in flakes. This process may

SUNLIGHT

be very severe, painful, and accompanied by the formation of blisters. After long periods of sunburn, the skin is apt to become permanently dry and wrinkled as well as browned.

Treatment.—Mere tanning of the skin under the sun's rays is a healthy sign which requires no treatment, but the severer forms are not only unsightly but often very painful. Prevention may be effected by the use of sunshades, veils, etc., those of a brown colour being most effective. The redness may be relieved by dabbing on an evaporating fluid such as eau-de-Cologne, or rose water. The effects of heat may also be to some extent prevented by sponging the exposed parts with an astringent such as Goulard's water or hazeline, or by the ancient practice of oiling the skin, or of applying an ointment such as cold cream after a bath.

SUNLIGHT (*see* LIGHT TREATMENT).

SUNSTROKE, HEAT-STROKE, INSOLATION, and THERMIC FEVER are terms applied to the effects produced upon the nervous system, and through it upon other organs of the body, by exposure to the sun or to overheated air. Although most frequently observed in tropical regions, this disease occurs also in temperate climates during hot weather. A moist condition of the atmosphere, which interferes with cooling of the overheated body, greatly increases the liability to suffer from this ailment.

Symptoms.—Three chief types of the disease are usually described.

HEAT SYNCOPE.—In this form the symptoms are those of exhaustion, with a tendency towards fainting or its actual occurrence.

HEAT APOPLEXY or ASPHYXIA.—In this variety the attack is usually sudden, and occurs like an apoplectic seizure. There is usually insensibility, and convulsions are frequent. Death is often very sudden.

ARDENT THERMIC FEVER.—This variety shows an excessive development of fever (hyperpyrexia), the

SUPPOSITORY

temperature of the body rising at such times to from 108° to 110° Fahr. or more. Accompanying this are the other symptoms of high fever, such as great thirst, quick, full pulse, pains throughout the body, headache, nausea and vomiting, together with breathlessness. After the attack has lasted for one or two days, death may ensue from collapse or from the case assuming the apoplectic form already described.

Treatment.—Means should be adopted to prevent attacks in the case of those who must necessarily be exposed to the sun. These consist in the wearing of loose clothing and of a suitable head-dress with protection to the neck and back, in due attention to the function of the skin, and in the avoidance of alcoholic and other excesses. Cold water may be drunk in small quantities at frequent intervals. Sleeping in the open air in very hot seasons is recommended. The treatment of a patient suffering from an attack necessarily depends upon the form it has assumed. In all cases he should if possible be at once removed into a shaded or cool place. Where the symptoms are mostly those of syncope and there is a tendency to death from heart failure, rest in the recumbent position and the use of diffusible stimulants, such as sal volatile, are the means to be adopted. Where, on the other hand, the symptoms are those of apoplexy or of hyperpyrexia, the most successful results are obtained by the use of cold (by pumping cold water over the head, neck, and back).

SUPPOSITORY is a small conical mass made of fat or glycerin-jelly, and containing drugs intended for introduction into the rectum. This method of using drugs may be chosen for various reasons. For example, the suppository, as in the case of soap or glycerin suppositories, is often used to produce an aperient action. Other suppositories, such as

SUPPRESSION

those of belladonna or morphia, are used to quiet pain and check the action of the bowels. Others are used for the sake of their influence on neighbouring organs.

The suppository is placed with its pointed end against the anus and with a firm but gentle screwing movement is pushed upwards. With the point of the forefinger, it must be pushed onwards for about 1 inch, past the sphincter muscle, otherwise it will not be retained. It must be quickly introduced, as the material of which it is composed rapidly softens when brought into contact with the body.

SUPPRESSION is the name applied to a failure on the part of the kidneys to secrete urine. This is sometimes a complication of fevers or of acute nervous affections, such as meningitis, but it is chiefly found in acute Bright's disease, and leads then to the dangerous condition known as uræmia. (See URÆMIA.) Sometimes in children during a feverish attack the urine is almost completely suppressed for some days with little ill result.

SUPPURATION means the process of pus formation. When pus forms on a raw surface, the process is called 'ulceration', while a deep-seated collection of pus is known as an 'abscess'. For more detailed information see ABSCESS, INFLAMMATION, ULCER, WOUNDS.

SUPRARENAL GLANDS, also known as SUPRARENAL CAPSULES or ADRENAL BODIES, are two organs situated one upon the upper end of each kidney. Each measures about 2 inches in length from above downwards, rather less than that from side to side; and each is about a quarter of an inch thick. The two together weigh about a quarter of an ounce.

SUTURE is the name given either to the close union between two neighbouring bones of the skull, or to the series of stitches by which a wound is closed.

SYMPATHETIC SYSTEM

SWAB is a term applied to a small piece of gauze, lint or similar material used for wiping out the mouth of a helpless patient or for drying out a wound. The term is also applied to a tuft of sterilised cotton-wool wrapped round a wire and enclosed in a sterile glass tube used for obtaining matter or membrane from the throat, from wounds, etc., in order that this may be subjected to bacteriological examination.

SWEAT (see PERSPIRATION).

SWEET SPIRIT OF NITRE, also known as SPIRIT OF NITROUS ETHER, consists of a mixture of water, alcohol, aldehyde, and various nitrous bodies. Probably no remedy with the exception of castor oil, enjoys such widespread use in household medicine as sweet spirit of nitre.

In spasmodic affections of all sorts, such as colic, cramp, asthma, it is of value. In cases of chill and fatigue followed by feverishness, loss of sleep, and the passage of urine in small quantities loaded with urates, it acts as a sedative and increases the flow of urine. In those attacks of feverishness, restlessness, sleeplessness, and sometimes mild delirium, which in nervous children are apt to follow upon any unusual excitement, exhaustion, or fright, it has a similarly beneficial effect. For this purpose it should be given in a considerable quantity of cold water.

In commencing colds it may be used in conjunction with hot foot-baths immediately before getting into bed. In such a case it sets up a copious perspiration and assists in cutting short the cold.

The dose of sweet spirit of nitre is about a teaspoonful for adults and 5 or 10 drops for very young children.

SYMPATHETIC SYSTEM is that part of the nervous system from which most of the nerves that connect and regulate the various internal organs appear to take their origin. It consists of scattered collections of grey matter known as ganglia, united by

SYMPTOM

an irregular network of nerve-fibres, those portions where the ganglia are placed most closely and the network of fibres is specially dense being known as 'plexuses'. The chief part of the sympathetic system consists of two 'ganglionated cords' that run through the neck, chest, and abdomen lying close in front of the spine.

SYMPTOM is a term applied to any evidence of disease. The term 'physical sign' is generally applied to symptoms of which the patient does not complain but which are elicited upon examination.

SYNCOPE is another name for fainting. (See FAINTING.)

SYNOVIAL MEMBRANE forms the lining of the soft parts that enclose the cavity of a joint.

SYNOVITIS means inflammation of the membrane lining a joint. It is usually painful and accompanied by effusion of fluid within the synovial sac of the joint. It is found in acute rheumatism, various injuries and inflammations of joints, and in chronic form in tuberculosis. (See JOINTS, DISEASES OF.)

SYPHILIS is a contagious and incurable disease of slow development, which, at its commencement, shows a peculiar sore at the site of infection, later brings on constitutional effects resembling those of other infectious diseases, and at a still later period produces degenerative and destructive changes in various organs. Owing to the circumstances which in the majority of cases attend the spread of syphilis from one person to another, it is generally classed as one of the three *venereal* diseases. It occurs also in a *congenital* or inherited form.

Symptoms.—The *acquired form* of the disease is commonly divided into three stages—PRIMARY, SECONDARY, and TERTIARY, although, in many cases, the tertiary stage is wanting, while in others there is no dividing-line between the secondary and tertiary symptoms. The disease presents great variations of intensity, being

SYPHILIS

occasionally of a 'malignant' type, in which widespread ulceration speedily comes on and even causes death; and in other cases showing little more than a slight skin eruption, though probably it exerts, even in such mild cases, a highly prejudicial effect upon the constitution. In doubtful cases of the disease the Wassermann reaction is regarded as an almost certain means of diagnosis.

The incubation period ranges from a fortnight to six weeks, though most frequently it occupies about four weeks. Then a small ulcer appears at the site of infection, which is accompanied by a peculiar hardness of the tissues immediately round and beneath it, and characterised by its resistance to all healing treatment. This, which is known as the PRIMARY SORE, may be very much inflamed, or it may be so small and occasion so little trouble as to pass almost or quite unnoticed. A few days after this sore has appeared, the lymphatic glands in its neighbourhood, and later those all over the body, become swollen and hard. This condition lasts for several weeks as a rule, and then the sore slowly heals and the glands subside. After a variable period, which, however, may in most cases be placed at about two months from the date of infection, the SECONDARY SYMPTOMS appear and resemble the symptoms of an ordinary fever in so far as they include rise of temperature and feverishness, loss of appetite, vague pains through the body, and a faint red rash usually seen best upon the front of the chest. The Wassermann test of the blood now gives a positive reaction. Other symptoms, very frequently present at this stage, are falling out of the hair, bloodlessness, the appearance of sores in the mouth and throat (mucous patches), headache with, occasionally, mental deterioration, and painful swellings on the bones. These symptoms last for about eighteen months, and then, in the major-

ity of cases which have been efficiently treated, they subside and the disease comes to an end, though, as already stated, it may have a permanently prejudicial effect upon the constitution. A curious feature which some cases show is that at a subsequent period of life, when the health has been brought low by overwork or worry, symptoms reappear, even although the disease seemed to have been completely cured.

In a smaller number of cases, especially those which have not been treated, TERTIARY SYMPTOMS develop after the lapse of some months or years. These consist in the growth, here and there throughout the body, of masses known as 'gummata'. These gummata may appear as hard nodules in the skin, or form tumor-like masses in the muscles, or cause great thickening of bones, or they may develop in the brain and spinal cord where their presence causes very serious symptoms. Those which lie beneath the skin or a mucous membrane may break down and form deep ulcers with characteristic, thickened, sharply cut edges. These often leave rounded brownish scars when they heal. These gummata yield readily, as a rule, to appropriate treatment, and generally disappear speedily when this is secured.

Still later effects are apt to follow at a subsequent period of life, such as disease of the arteries, leading to aneurysm (*see* ARTERIES, DISEASES OF, and ANEURYSM), to apoplexy, and to early mental failure; also certain nervous diseases, of which locomotor ataxia and general paralysis are the chief.

The *inherited form* of syphilis may affect the child before birth, leading then as a rule to miscarriage, or to dead-birth of the child, if it be born at full time. Or it may show its first symptoms a few weeks after birth, the appearances then corresponding to the secondary manifestations of the acquired form. The

child, apparently at first quite healthy, begins to waste, so that its skin appears loose and wrinkled. Eruptions develop and the breathing is of a 'snuffling' character, in consequence of inflammation in the mucous membrane of the mouth and nose. Deafness is also a common result of inflammation in the delicate structures of the inner ear. On the other hand, no symptoms may appear till later in life, when the nose becomes sunken and broad at the bridge, and the eyes are dull as the result of inflammation affecting the cornea (keratitis) or iris (iritis). These changes often appear about the age of 12 or 14, causing dimness of vision. When the permanent teeth appear the central incisors are frequently notched at the edge (Hutchinson's teeth). These children are of poor health and specially liable to contract tuberculosis.

Treatment.—Any person who suffers from this disease forms a source of infection to those around, especially in the early stages, and it is his duty to take precautions that he may not spread it. He should bear in mind the fact that the discharge from any sore or abraded surface is highly contagious. He should be most careful not to drink from any public drinking utensil, and he should never allow any one else to use his sponge or towel or to wear any of his clothes. He must remember, too, the fact that the disease is transmissible to his offspring so long as he shows any manifestation of its presence; and in this relation it is usual for physicians to forbid a person suffering from syphilis to marry till at least two years have elapsed since any sign of the disease has been present, and then only if an energetic course of treatment has been carried out.

For the cure of the disease, the general health above all things requires attention, and the subject of the disease must live a regular and

SYRINGE

healthy life as regards exercise, diet, work, and avoidance of undue exposure. The drugs possessing a special influence upon the progress of the disease are salts of mercury, bismuth, and arsenobenzol compounds, which seem to be most beneficial in the earlier stages, and salts of iodine, especially iodide of potassium, which are most useful in the tertiary stage of the disease.

The effect of these various remedies is controlled by performing the Wassermann reaction on the blood, and in the case of affections of the nervous system, by carrying out this reaction as well as other tests upon the cerebro-spinal fluid.

SYRINGE is the name of an instrument for injecting liquids into pas-

SYRUP

sages or cavities. Syringes vary considerably in shape and size according to the purpose for which they are used.

SYRINGOMYELIA is a rare disease affecting the spinal cord, in which are found irregular cavities surrounded by an excessive amount of the connective tissue of the central nervous system.

SYRUP, formed of a mixture of sugar and water, is a fluid frequently used for the administration of drugs. It is employed partly on account of its pleasant taste, and largely also because it retards changes in drugs which deteriorate on exposure to the air. The dose of most syrups is about a teaspoonful.

TABES means, literally, a wasting disease, and is an old name applied to various diseases, such as consumption, locomotor ataxia, tuberculosis accompanied by enlargement of glands, etc.

TABLET is the name given to a solid disc-like preparation made by compression and containing drugs mixed usually with sugar and other indifferent material. Tablets are very widely used because of their convenience and accurate dosage.

TACHYCARDIA is the name applied to a disturbance of the heart's action which produces great rapidity of the pulse.

TÆNIA means a tapeworm. (See WORMS.)

TAKADIASTASE is a Japanese preparation produced by the cultivation on bran of a fungus which has a powerful digestive action on starchy food, and is therefore much used in treatment of weak digestion.

TALC is a soft powder consisting of magnesium silicate. It is much used as an ingredient of dusting powders, and is also administered internally in ulcerative conditions of the bowels.

TALIPES is the technical name for clubfoot.

TAMARIND is the preserved pulp of the fruit of a West Indian tree. It contains a large amount of vegetable acid, is eaten as a confection, and for some people forms an admirable laxative.

TANNIN, or **TANNIC ACID**, is a white or yellowish-white powder, which is very soluble in water or glycerin. It is extracted from oak-galls in large amount, but it is also present in almost all vegetable infusions.

Tannin is used largely as a styptic to apply directly to bleeding wounds or surfaces. Owing to its astringent effect, it is a useful application to relaxed mucous membranes; it is employed, for instance, in lozenges

when the throat is relaxed, or applied in ointment for piles. Glycerin of tannin is also a convenient method of applying this substance as an astringent, by painting, to the throat. Tannin is also used to check diarrhœa, administered either in the form of some vegetable astringent infusion, or in a chemical combination which is not destroyed in the stomach, such as tannalbin, or tanocol.

TAPEWORM (see WORMS).

TAPPING is the popular name for the withdrawal of dropsical fluid from the cavities or the subcutaneous tissues of the body.

TAR, or **PIX LIQUIDA**, is a thick, dark, oily substance obtained by the destructive distillation of several species of pine-tree, or of coal. Generally speaking, wood-tar contains resin, creosote, and turpentine in considerable quantities, also benzol, carbolic acid, acetic acid, wood-spirit or methyl alcohol, methyl-acetate, acetone, and wood-naphtha. The aniline dyes, antipyrin bodies, saccharin, and various other medicinal substances and disinfectants are obtained indirectly from coal-tar.

Externally, for its antiseptic and stimulating properties, tar is largely used in chronic skin diseases, particularly psoriasis and dry eczema. It is employed most commonly in the form of tar ointment, rubbed in night and morning, or smeared upon a cotton cloth and worn round the affected part. An alcoholic extract known as 'liquor carbonis detergens' is also used to cleanse areas of skin affected by the disease.

Internally, it is most commonly used in the form of *tar-water*, made by shaking up one part of tar with ten of water, allowing to settle, and decanting the clear liquid. This tar-water may be taken in wineglassful doses. Syrup of tar is tar-water sweetened with sugar.

TARAXACUM, or **DANDELION**, is a

TARTAR

very old remedy for dyspepsia associated with torpidity of the liver. An extract and a fluid extract are prepared from the fresh leaves and roots, and used as ingredients of pills or tonic mixtures. The fresh milky juice of the flower-stalks is also sometimes used as a remedy for warts.

TARTAR is a concretion that forms on the teeth near the margin of the gum, consisting chiefly of phosphate of lime deposited from the saliva. Mixed with this are food particles, and in it flourish numberless bacteria. It is important that it should be prevented from forming by regular brushing of the teeth, or removal after it has formed, because it gives rise to wasting of the gums and loosening of the teeth, as well as to dyspepsia, bad breath, and ill-health.

TARTAR EMETIC, **TARTARATED ANTIMONY**, or **TARTRATE OF POTASSIUM AND ANTIMONY**, is a white crystalline substance, which in minute doses acts as a diaphoretic and expectorant, in larger doses (1 to 2 grains) as an emetic, and in very large quantities or in small quantities administered over a long period as an irritant poison. It must not be confounded with cream of tartar, which is another name for bi-tartrate of potassium, a harmless substance.

TARTARIC ACID is almost identical with citric acid in appearance, chemical properties, and medicinal uses. Tartaric acid is obtained from grapes, while citric acid is contained in many fruits like the lemon, lime, and orange. (See **CITRIC ACID**.)

TEA (see **COFFEE AND TEA**).

TEETH are hard organs developed in connection with the mucous membrane of the mouth and implanted in the jaw-bones.

The teeth appear in a definite order and at definite periods, unless delayed by disease. The order of appearance for the first set of teeth or milk teeth is as follows :

TEETH, CARE OF

Middle incisors	about	6th month
Lateral incisors	„	9th „
First molars	„	12th „
Canines (eye-teeth)	„	18th „
Second molars	„	24th „

As regards the permanent teeth, the first molars appear when the child is six years old, the incisors about seven and eight, the bicuspid about nine and ten, the canines about twelve, the second molars about thirteen, and the wisdom teeth frequently do not cut the gum till the age of twenty or twenty-five.

TEETH, CARE OF.—Decay of the teeth is an extremely common condition among civilised peoples, and is most frequent in childhood and early adult life. It has been found that between 70 and 90 per cent of all children attending school have at least one carious tooth, while from 12 to 20 per cent show advanced dental disease.

Causes.—The direct cause of decay is attributable to micro-organisms which flourish in the food particles and tartar on the teeth, and which produce acids that dissolve their lime salts. In some persons, however, the teeth decay much more readily and more quickly than in others. This is in many cases due to bad quality of the teeth, in others due to overcrowding or a bad arrangement in the jaw which allows food particles to accumulate between the teeth and prevents their cleansing, or which prevents opposing teeth from meeting one another properly in chewing. Decay rarely appears on free, smooth surfaces that are exposed to the rubbing of the lips and tongue and the scouring of the food ; nor among primitive peoples who subsist on coarse food that requires a great deal of chewing. It begins usually in some groove or pit in the enamel or between the teeth, and when the process has made a small opening through the enamel it may spread widely in the dentine, so that the first sign the person gets, apart from discoloration

TEETH, DISEASES OF

of the tooth, may be its sudden caving in during a meal. For this reason the teeth should be carefully inspected by a dentist once or twice every year.

Treatment.—In early life the provision of suitable and sufficient food is of great importance in forming strong teeth. The prevention of decay, though not always successful, may be greatly assisted by constant care of the teeth. This consists mainly in cleansing the teeth with a brush morning and night, especially at night, and, if food particles tend to collect between the teeth, in removing these at the same time with a quill toothpick or with a thread of floss-silk. The tooth-brush should be moved not only across the teeth but also up and down, so as to dislodge food particles between them. A chalk tooth-powder should be used as this substance both scours the teeth and neutralises the acid mentioned above. Various alkaline and antiseptic tooth-pastes are also useful in preventing decay. Substances like charcoal, which impart a brilliant polish to the teeth, should not be often used, since they scratch the enamel and help to erode it. Great care should be taken by persons who use medicines containing acids, like some of the iron preparations, that they rinse the mouth out with water immediately after each dose. The question of food is an important one, especially in children, because the chewing of hard foods such as apples, bread crusts, etc., both scours the teeth and stimulates the circulation in the jaw and gum and so improves the nutrition of the teeth.

TEETH, DISEASES OF.—From the fact that the teeth are highly sensitive, that any interference with their use causes marked disturbance of digestion, and that good teeth form an aid to beauty, disorders of these organs are of great importance. Only the most common disorders will be mentioned here; some conditions

TEETH, DISEASES OF

affecting the gums are mentioned under MOUTH, DISEASES OF; see also GUMBOIL and NOSE, DISEASES OF.

TEETHING is a condition of irritation in the mouth that accompanies the appearance of the teeth. With infants it is apt to be specially troublesome and to give rise to such general symptoms as diarrhœa, cough, skin eruptions, and even convulsions. The source of irritation is generally quite evident, as the child continually rubs the part of his gums beneath which the growing teeth are situated. These symptoms are often aggravated when parents have delayed the vaccination of the child so long that the child is troubled by the two sources of irritation at one time. Even adults possessed of a small lower jaw sometimes suffer great pain during the cutting of the lower wisdom teeth, the reason being that there is not enough space left for the new tooth in the corner between the second molar and the vertical portion of the jaw.

Treatment.—In children, comfort is often got when the child is given some harmless object, such as an india-rubber ring, against which it can press the gums. If the gums be evidently very painful and inflamed, a few superficial scratches with a sharp knife give immediate relief, though this does not quicken the appearance of the tooth. In the young adult, somewhat similar means may give relief, but it is occasionally necessary to extract the wisdom tooth or the tooth in front of it.

TOOTHACHE is a symptom of several affections of the teeth and neighbouring parts. The pain may vary from slight annoyance to great agony, and it often comes on at fairly regular intervals.

Much the commonest cause of toothache is decay affecting one or more teeth, particularly when the cavity in a tooth reaches near to or exposes the pulp. Gumboil, consisting of an inflammatory condition

connected with the root of the tooth, which often proceeds to the formation of an abscess, is another cause of dull, throbbing pain. (*See GUM-BOIL.*) The want of effective cleansing of the mouth, leading to the presence of acid secretion on the gums and between the teeth, which eats gradually into the enamel, is another cause of very annoying though less severe toothache.

Treatment.—During an attack of toothache affecting a whole row of teeth relief can often be obtained by rinsing the mouth with warm bicarbonate of soda solution. If a tooth with a large cavity be affected, the pain can generally be at once eased by filling the hole with a small piece of cotton-wool dipped in pure carbolic acid, or in an essential oil, such as oil of cloves. A dose of Epsom salts is also beneficial. If the tooth be so far decayed as to be useless for chewing, it should be extracted. When the toothache is due, however, to general debility, tonic remedies give relief. (*See also NEURALGIA.*)

IRREGULARITY OF THE TEETH, when the permanent set appears, may be due to defective development of the jaw, to a highly arched palate, or very often to slowness in casting off the temporary set. Slight irregularities disappear as the jaw grows, but if the deformity be great, much may be done to remedy it by judicious extraction of some teeth and by wearing for a few months in the mouth an elastic apparatus that presses the other teeth gradually into position.

LOOSENING OF THE TEETH may be due to accident, to wasting of the gums in consequence of the irritation set up by tartar on the teeth, or to the degenerative processes of advancing age. A tooth knocked out by injury may be washed and replaced in its socket, when it will usually again become firmly fixed, and the same is true of

teeth which have been merely loosened. When the gums are receding and the teeth loosening in consequence of a deposit of tartar and a collection of pus upon the inflamed gums, the tartar should be removed by a dentist and some antiseptic mouth-wash like tincture of myrrh or liquor thymol in water, should be used.

INFLAMMATION OF THE GUMS (gingivitis) is a chronic condition affecting chiefly middle-aged persons and more common in women than men. The gums are congested, often bleed either when food is chewed or when the teeth are brushed, and frequently show a certain amount of ulceration and purulent discharge at their edges. At a later stage, the gums waste and their margins shrink away from the teeth, leaving the necks of these exposed. The person whose teeth show either of these changes generally suffers from indigestion and anæmia. There is, however, no discharge of pus from the sockets of the teeth, a condition which distinguishes this disease from pyorrhœa. The tartar should be carefully scraped from the teeth and a mild antiseptic mouth-wash should be used daily. The gums should be regularly brushed with a soft tooth-brush and antiseptic aromatic tooth-paste, or, if too tender for this, should be wiped carefully with tincture of myrrh on a pledget of cotton-wool. Daily massage of the gums with the fingers promotes the circulation in the gums and improves their nutrition.

PYORRHŒA ALVEOLARIS is a condition of suppuration within the sockets of the teeth, in which large quantities of pus are produced round the teeth and are constantly swallowed with the food, so that increasing ill-health results. The condition is not frequent, but is often confused with the much milder state of inflammation of the gum-margins, mentioned above.

TEMPERAMENT

Treatment consists in the use of measures which improve the general health, careful dental attention, and the regular use of antiseptic mouth-washes, particularly peroxide of hydrogen.

INFLAMMATION OF THE TOOTH FANG (periodontitis) is a condition which may be present in various degrees. There may be simple acute inflammation following a blow on the tooth; or due to the presence of an imperfect stopping; and in the severest form pyorrhœa.

Symptoms.—There is pain and inflammation in a tooth or teeth without any obvious cause in the form of decay. Tenderness is present when the affected tooth is touched, and especially when the tooth is used for biting. The tooth usually appears to the individual to stand up a little higher than the other teeth and congestion is often visible in the neighbouring gum. Such a condition may come and go for a long time. If an X-ray photograph is taken of the teeth, a clear area may be seen round the fang (*root abscess*). This condition is believed to have a considerable effect of a harmful nature upon the general constitution, leading to rheumatic changes in the joints and occasionally to inflammation on the valves of the heart, or to severe anæmia.

Treatment.—In early stages, painting the gum with weak tincture of iodine is sufficient to abate inflammation, but the tooth may require to be extracted. In more advanced conditions a certain amount of extraction of the teeth is necessary. Vaccines prepared from the tooth sockets are sometimes used, and the mouth should be kept clean by the use of an aromatic mouth-wash. The general condition of the patient as regards dyspepsia and anæmia, often requires considerable attention also.

TEMPERAMENT is a term that includes those vague general peculiar-

TEMPERATURE

ities of mind and body that render some persons more liable than others to be affected by particular diseases. (See IMMUNITY, and also ALCOHOLISM, HYSTERIA, INSANITY, NEURASTHENIA.)

TEMPERATURE of the body will be dealt with here. For the proper temperature of rooms, baths, etc., see NURSING; BATHS.

Rise of temperature is a characteristic of acute diseases, and of diseases due to micro-organisms, the poisonous products of which lead to increased waste of the tissues. Injuries to the nervous system, even unpleasant sensations in children and nervous people, may have a similar effect. In persons dying in a feverish condition, the temperature often rises very high immediately before death. Rapid rise of temperature in such a case is therefore a very ominous sign.

Many diseases have a characteristic course of temperature, so that in hospital a glance at the temperature chart is often sufficient to acquaint a physician with the disease from which the patient is suffering. Thus advanced consumption, pneumonia, enteric fever, measles, and malaria show, as a rule, quite recognisable temperature records.

High temperature in some diseases is a much less serious feature than in others. Thus in enteric fever or pneumonia 105° Fahr. is an ordinary temperature, while in rheumatic fever and diphtheria the temperature generally ranges between 101° and 103°, so that in these diseases a temperature of 104° gives cause for anxiety.

Temperature is generally measured by a thermometer, those intended for clinical use possessing a long, narrow bulb, an index registering from 95° to 110°, and being so made that the column of mercury does not fall back into the bulb till it is shaken down. The thermometer is placed either in the armpit or under the

TENDON

tongue for half a minute or longer, depending on the thickness of the glass. The thermometer should be washed with cold, not with hot water.

The Fahrenheit scale is generally employed in Great Britain and in the United States, and the Centigrade or Celsius scale, used on the Continent of Europe.

TENDON, SINEW, or LEADER is the cord that attaches the end of a muscle to the bone or other structure upon which the muscle pulls when it contracts. Tendons are composed of bundles of white fibrous tissue arranged in a very dense manner, and are of great strength.

TENNIS ELBOW (*see* ELBOW).

TEREBENE is a clear, colourless fluid, with an odour like fresh pine sawdust. It is used as an expectorant in bronchitis, and also in dyspepsia with the view of checking fermentation and vomiting. The dose is 5 or 10 drops upon sugar or taken in capsule.

TESTICLE.—The testes or testicles are the two male sexual glands. Each is developed in the corresponding loin, but before birth they descend through openings in the lower part of the front of the abdomen into a fold or pouch of skin known as the scrotum.

TESTICLE, DISEASES OF.—The pouch of skin in which the testicles lie is liable to various general skin diseases, but particularly to eczema, which is in many cases very irritable and very difficult of cure. Cancer of the skin in this region seems to be specially common among chimney-sweeps, the result, it is supposed, of some irritating substance contained in soot. Hernia, which in some cases passes into the scrotum, is treated under a special heading. Sometimes, owing to defective development, the testicles are retained within the abdomen, and in that case these glands are likely to be atrophied and useless as well as painful.

HYDROCELE is a local dropsy

TESTICLE, DISEASES OF

distending one side of the scrotum with fluid often to a great size. (*See* HYDROCELE.)

VARICOCELE is a condition in which the veins of the spermatic cord, especially on the left side, become unusually numerous and distended, the causes being much the same as those of varicose veins in other parts. The chief symptom is a dragging sensation in the testicle, which in some cases becomes at times very painful. This symptom is specially marked in warm weather and after exertion, the mass of veins at such a time becoming very distinct and resembling a 'bag of worms', though they empty quickly when the person lies down. Cold sponging of the part, careful regulation of the bowels, and the support of a suspensory net bandage afford all the treatment that is necessary in most cases; though, when the condition is very painful or the person is desirous of entering one of the public services, an operation is advisable with the object of ligaturing and removing the veins entirely.

INFLAMMATION of an acute type (orchitis) may arise in persons suffering from cystitis, stone in the bladder, and various forms of inflammation in the urinary organs, the most common cause of all being gonorrhœa. It may follow also upon some cases of mumps. The symptoms are intense pain and swelling with redness of the skin over the affected testicle; and the usual treatment consists of rest in bed, the application of opium fomentations, suppositories of morphia, and administration of a saline purgative. In some cases the condition goes on to the formation of an abscess which bursts through the skin with immediate relief of pain. The condition is then treated as an abscess elsewhere.

TUBERCULOSIS comes on in the testicle occasionally, especially when some other organ, such as the bladder,

TETANUS

is already the seat of the disease. It causes practically no pain, and is therefore often far advanced before it attracts attention. In cases where no other organ is affected, the testicle is usually removed in order to prevent the spread of the disease to other parts of the body.

INJURIES of the testicles are rare. A severe blow may lead to shock and symptoms of severe collapse for a time.

TETANUS, or **LOCKJAW**, is a disorder of the nervous system, manifesting itself by painful and lengthened spasm of the voluntary muscles throughout the body.

The onset of the disease generally follows a wound, especially a deeply punctured, lacerated, or gunshot wound, usually appearing some 4 or 5 days after the wound has been inflicted, although it may be delayed for 3 or 4 weeks, by which time the wound is likely to be completely healed.

Symptoms.—The first signs of the disease usually show themselves as stiffness in the muscles near the wound, followed later, no matter where the wound is situated, by stiffness about the muscles of the jaw, causing difficulty in opening the mouth, which soon increases to *lockjaw* or trismus. This general muscular rigidity, which at first is not constant but occasionally undergoes relaxation, is accompanied by frequently recurring convulsive seizures, which are readily excited by the slightest irritation, such as from a draught of cool air, a bright light, the closing of a door, etc. In such attacks there is great suffering. These acute symptoms may subside after a few days and the patient gradually recover. More frequently the symptoms increase in severity and death ensues.

Treatment.—Tetanus tends especially to follow wounds infected by stable refuse, by street dust, or by the deeper soil thrown up by shells

THIRST

on the battlefield. All wounds exposed to infection in this way should be carefully purified.

An antitoxic serum has been prepared, and its use has been attended by great benefit in the case of operations upon animals, like the horse, which are liable to contract tetanus. In human beings, however, the results of its injection for the cure of tetanus have been less successful, due to the fact that the disease has usually obtained a firm hold upon the nervous centres before marked symptoms appear and call for the use of the antitoxin. To be of any use this serum must be injected at the earliest possible moment.

TETANY is a comparatively slight and passing malady consisting of muscular spasms, brought on in persons, especially children, of nervous temperament by such causes as rickets, teething, convalescence from acute disease, and dyspepsia. Occasionally, however, it forms a serious malady. The administration of extract of the parathyroid glands has a beneficial influence on the symptoms of this malady.

THEOBROMINE is the alkaloid upon which the stimulating action of cocoa and chocolate depends. (See **CHOCOLATE**.)

THIGH is the portion of the lower limb above the knee. The thigh is supported by the femur or thigh-bone, the longest and strongest bone in the body.

Deep wounds on the inner side of the thigh are dangerous by reason of the risk of damage to the large vessels. Pain in the back of the thigh is often due to inflammation of the sciatic nerve (see **NEURALGIA**). The veins on the inner side of the thigh are especially liable to become dilated (see **VARICOSE VEINS**). The femur on account of its strength is seldom broken.

THIRST, like appetite, is an instinctive craving for something necessary to the continuance of bodily

THORAX

activity. The sensation of thirst is generally referred to the back of the throat, because when there is a deficiency of water in the system, the throat and mouth especially become parched by evaporation of moisture from their surface. A desire for water is also a feature of many conditions associated with great exhaustion.

Treatment.—Thirst is relieved by water, and when due largely to heat is specially benefited by drinks which afford protection to the throat, such as meal-water, barley-water, and other mucilaginous fluids. It is also relieved by substances that stimulate the flow of saliva, such as lozenges and acidulous drinks. Among the latter, which are very suitable for feverish conditions, may be mentioned 'Imperial Drink' (*see* CREAM OF TARTAR). During vomiting great thirst may occur, and these conditions are often both relieved by sucking small pieces of ice.

THORAX is another name for the chest.

THROAT is, in popular language, a vague term applied indifferently to the region in front of the neck, to the larynx or organ of voice, and to the cavity at the back of the mouth. The last-mentioned use of the word, to denote the pharynx or cavity into which the nose, mouth, gullet, and larynx all open, is the correct one. (*See* PHARYNX.) Information will also be found under NECK, LARYNX, TONSILS, NOSE.

THROAT DISEASES form a large and important class, and include some of the most serious and fatal of maladies. For convenience the chief diseases that affect also the larynx and gullet are considered here.

Information will also be found under the headings CHOKING, CLERGYMAN'S SORE THROAT, CROUP, DIPHTHERIA; MOUTH, DISEASES OF; NOSE, DISEASES OF; TONSILLITIS.

ACUTE LARYNGITIS is usually produced by exposure to cold, either

THROAT DISEASES

directly or through a catarrh extending from the nose above or from the bronchial tubes beneath to the mucous membrane of the larynx. It accompanies some of the infectious diseases in which the throat is liable to suffer, such as measles, scarlatina, diphtheria. Excessive use of the voice, as in loud and prolonged speaking, and the inhalation of irritating particles and vapours are also well-recognised causes.

Symptoms.—The chief changes in the larynx are great redness and swelling, which affect the whole interior of the cavity. The effect is to produce narrowing of the channel for the entrance of air, and to this the chief dangers are due. The symptoms vary with the intensity of the attack, but, along with more or less feverishness, there is usually a sense of heat, dryness, and pain in the throat, together with some difficulty in the act of swallowing. Cough is a constant symptom, and the voice, like the cough, is rough, husky, or may for a few days disappear almost entirely. In severe cases, the face and surface generally become livid, and suffocation threatens, particularly during the paroxysms of coughing. In favourable cases, which form the majority, the attack tends to abate in a few days.

Treatment.—The treatment consists in keeping the patient in bed in an atmosphere of 65° to 70° F., made moist by steam (*see* BRONCHITIS). The use of warm gargles, and the frequent inhalation of the vapour of hot water, containing such soothing substances as benzoin, or menthol, and the application of hot fomentations to the front of the neck, will be found of much value. Internally, diaphoretics, such as small doses of Dover's powder, are also to be recommended. Such remedies usually suffice to relieve the attack, but in very severe cases more active interference may be necessary.

CHRONIC LARYNGITIS may

THROAT DISEASES

occur as a result of repeated attacks of the acute form, or may arise independently owing to such causes as habitual exposure (especially where along with this there is over-indulgence in alcohol), the habitual over-use of the vocal organs, etc. Some cases are due to tuberculosis, syphilis, and other chronic inflammatory diseases, and these are apt to produce ulceration of the vocal cords and other parts of the larynx and ultimately destruction of its cartilages.

Symptoms.—The symptoms vary according to the extent and amount, as well as the duration, of the inflammation. Thus there may simply be a certain huskiness or hoarseness on attempts at the use of the voice, this condition being well exemplified in the so-called clergyman's sore throat; while, on the other hand, there may be not only complete loss of voice but severe pain in the act of swallowing, and great difficulty in breathing, accompanied sometimes with expectoration of large quantities of matter in the cases where ulceration is present. Under this variety of the disease may be included the ulceration due to syphilis and that occurring in the course of phthisis.

Treatment.—In the treatment of the chronic forms of laryngitis, rest to the parts is essential, any attempts at continuing the use of the voice only aggravating the condition; while tonic remedies should be employed to strengthen the system generally. The diet must be made as simple as possible, and all irritating condiments such as mustard, pickles, and spices should be avoided. Alcohol is also highly prejudicial, especially in the form of strong spirits, and should be avoided. The habit of smoking must be abandoned. The improper use of the voice has been dealt with under the simple but very troublesome form of laryngitis known as CLERGYMAN'S SORE THROAT, which is prone to affect those who use the voice a great deal.

THROAT DISEASES

TUMORS and various *inflammatory growths* are frequently met with in the larynx and may give rise to symptoms of chronic laryngitis. Such growths may be of simple character, as warty excrescences occurring upon or in the neighbourhood of the vocal cords. They are detected by means of the laryngoscope, and can often be dealt with effectually by a very slight operation, though one requiring great skill. Cancer of the larynx may often be removed successfully if the disease is detected in its early stages. *Hoarseness may then be the only symptom.* Hence arises the great importance of a careful examination of the larynx by an expert in every case of hoarseness that has lasted for some weeks or more.

NERVOUS AFFECTIONS of the larynx occur independently of any local disease. One of the most important of these is *laryngismus stridulus*, otherwise called *child-crowing* or *spasmodic croup*. This condition occurs chiefly during the early years of childhood, and manifests itself by a suffocative attack accompanied by peculiar 'crowing' breathing, as the result of spasm of the vocal cords which causes great interference with the entrance of air. (See CROUP.)

In the condition known as *nervous aphonia*, which occurs mostly in women of hysterical temperament or in circumstances of enfeebled health, the voice becomes reduced to a whisper, but there is seldom any affection of the breathing, or cough, and the laryngoscope reveals a perfectly healthy state of the parts. In such cases the remedies must be directed to the improvement of the general health. The use of electricity (faradism) applied to the neck is often attended with marked benefit. This condition may suddenly disappear as the result of a powerful mental impression.

PHARYNGITIS is a chronic in-

inflammatory condition affecting the wall of the pharynx or throat proper. It is usually associated with derangements of the digestive organs, but may accompany chronic laryngitis, and is often caused by the irritation of highly spiced food or of constant spirit-drinking, or even by excessive tobacco-smoking. On looking into the back of the throat, while the tongue is held down, one sees the mucous membrane unduly red and glazed, with enlarged lymph-follicles like sago-grains scattered over it. Small varicose veins are often seen here and there, and when these burst, the person may spit up a good deal of blood, which he is apt to attribute wrongly to some disease in his lungs. It produces considerable irritation, cough, tickling in the throat, and discomfort which may last long if not treated. Treatment consists in removing any cause of irritation, in remedying any dyspepsia that may be present (*see* DYSPEPSIA), and in the application to the part of astringent paints and gargles, or of the galvano-cautery.

NARROWING OF THE GULLET.

—The *œsophagus* or gullet may be the seat of catarrhal or inflammatory conditions causing discomfort in swallowing. Local injuries, such as the swallowing of scalding or corrosive substances, may cause ulceration followed by the formation of a scar which narrows the passage and produces the symptoms of *stricture* of the *œsophagus*—namely, pain and difficulty in swallowing, with return of the food.

A still more serious and frequent cause of *œsophageal stricture* is that due to cancerous growth in the canal, which may occur at any part, but is most common at the lower end, near the entrance into the stomach. The chief symptoms of this condition are increasing difficulty in the passage downwards of the food, steady decline in strength, together with enlargement of the glands in the neck,

while the diagnosis is rendered the more certain by the age (as a rule at or beyond middle life). Life may be prolonged for a considerable time and freedom from pain obtained by fluid food; and the operation of gastrostomy, by which an opening is made through the front of the abdomen, allows food to be directly introduced into the stomach.

A variety of *œsophageal stricture* is sometimes met which is due entirely to nervous causes, namely, that form occurring in hysterical persons termed *spasmodic stricture*. Here the attack of difficulty in swallowing comes on usually when the patient is at meals, and the food cannot pass down. The remedies most suitable are tonics and the frequent passage of the stomach-tube, which, as a rule, soon entirely remove the tendency to spasm.

INJURIES OF THE THROAT from without have been briefly referred to under CUT-THROAT.

FOREIGN BODIES sometimes lodge in the throat, being either of the nature of food which has been swallowed in too large or too hard pieces, or of the nature of indigestible substances like coins which children are apt to place in the mouth. Bodies which lodge in the respiratory part of the throat, *i.e.* at the entrance to or in the cavity of the larynx, set up immediate symptoms of choking. (*See* CHOKING.) Bodies which lodge in the gullet, on the contrary, do not usually set up any immediately serious symptoms, though their presence causes a considerable degree of discomfort. Such bodies are divided for practical purposes into two classes. One class includes smooth bodies like coins or fruit stones, which may be pushed down into the stomach or pulled up into the mouth by means of a bougie or a special instrument known as a 'coin-catcher'. The other and more dangerous class comprises bodies which are too large to be pushed down into the stomach and safely

THROMBOSIS

passed by the bowels, or too rough to be pulled back into the mouth, such as large pieces of bone, or large plates of artificial teeth.

THROMBOSIS means the formation of a blood-clot within the vessels or heart during life.

THYMOL is a white, crystalline, camphor-like substance derived from oil of thyme and other volatile oils. It has an antiseptic action, and is used both externally in ointment and sometimes internally in putrefactive conditions of the alimentary canal. It is used also to expel worms from the intestinal canal, especially the hookworm and whipworm which cause anæmia.

THYMUS GLAND is a temporary structure which reaches its greatest size at about the second year of life and then gradually dwindles away.

The gland consists of a right and a left lobe, and lies in the lower part of the neck and upper part of the chest, reaching down at the second year of life to the fourth rib.

THYROID GLAND.—This is a highly vascular organ situated in front of the neck. It consists of a narrow 'isthmus' crossing the wind-pipe close to its upper end, and joining together two 'lateral lobes' which run upwards one on each side of the larynx. The gland is therefore shaped somewhat like a horseshoe, each lateral lobe being about 2 inches long and the isthmus about $\frac{1}{2}$ inch wide, and it is firmly bound to the larynx. The weight of the thyroid gland is about one ounce, but it is larger in females than in males, undergoes in many women a periodic increase at each time of menstruation, and often reaches an enormous size in the condition known as *goitre*.

The thyroid gland of the sheep was introduced as a remedy for myxœdema, and is now obtainable in tablets. (See MYXŒDEMA.)

Among the conditions in which it has proved valuable are cretinism,

TINCTURE

excessive stoutness, eclampsia, and some cases of widespread psoriasis. Also in the later stages of pregnancy, a condition which appears to make great demands upon the activity of the thyroid gland, these tablets are often administered with advantage. Over-doses of the gland are apt to produce violent headache with feebleness and rapidity of the heart's action.

THYROID GLAND, DISEASES OF.

—When the secretion of the gland is not produced in sufficient amount or the gland undergoes atrophy, the diseases known as **CRETINISM** and **MYXŒDEMA** are liable to result, according as the affected person is an infant or is already grown. Enlargement of the gland is described under **GOITRE**, and a peculiar type of enlargement associated with nervous symptoms and protrusion of the eyes is known as *exophthalmic goitre*. In some cases the gland undergoes rapid enlargement, it may be in one part, with symptoms of palpitation, nervousness, sweating, etc. This condition is known as *thyrotoxic goitre*.

Cases in which a minor degree of insufficient action of the thyroid gland is present with modified symptoms of myxœdema are known as *hypothyroidism*, and are sometimes associated with defective action of the kidneys and relieved when thyroid gland extract is administered. Other cases occur presenting liability to tremor, palpitation, and nervousness, which are associated with a mild degree of overaction in the thyroid gland, and these are known as *hyperthyroidism* and are often successfully treated by administration of iodine or by application of radium to the thyroid gland.

TIBIA is the name of the larger of the two bones in the leg.

TINCTURE is an alcoholic solution, generally of some vegetable substance. Most are made with proof spirit, some with rectified spirit. Among the best-known drugs

TINEA

from which tinctures are made, we have aconite, arnica, orange, belladonna, digitalis, perchloride of iron, gelsemium, guaiacum, hyoscyamus, lobelia, myrrh, nux vomica, opium, squills, strophanthus, and ginger. The usual dose of a tincture is about a teaspoonful, but the tinctures of the more active drugs such as aconite, belladonna, digitalis, perchloride of iron, gelsemium, nux vomica, opium, and strophanthus are given in much smaller amounts, usually from 5 to 20 drops at one time.

TINEA is the technical name for ringworm. (See RINGWORM.)

TISSUES OF THE BODY are the simple elements from which, on microscopic examination, the various parts and organs are found to be built. All the body originates from the union of a pair of cells, but as growth proceeds the new cells produced from these form tissues of varying character and complexity. It is customary to divide the tissues into five groups :

- (1) Epithelial tissues, including the cells covering the skin, those lining the alimentary canal, those forming the secretions of internal organs, etc.
- (2) Connective tissues, including fibrous tissue, fat, bone, cartilage.
- (3) Muscular tissues.
- (4) Nervous tissues.
- (5) Wandering corpuscles of the blood, lymph, etc.

TOBACCO is the leaf of several species of *Nicotiana*, especially of an American plant. It is not used in medicine except to prepare a soothing lotion, but demands some notice here on account of its popular use and the marked effects it produces.

The action of tobacco depends largely upon the constitution of the smoker, his habituation to the drug, and the circumstances in which he smokes.

A very small amount of nicotine, such as that derived from a single cigarette, has a decidedly stimulating effect upon the mental and bodily

TOBACCO

powers. Thus a pipe after breakfast is said to impart a feeling of vigour and to exert a laxative effect.

In larger amount, the action is a depressant and narcotic one, which in habitual smokers is modified to a sedative and quieting effect upon the nervous system, without much depression of the heart or other organs. The most suitable time for smoking is generally admitted to be after meals, and especially in the evening after the day's work is at an end, when the sedative action is most beneficial to the nervous system. Different people vary widely in their susceptibility to the influence of tobacco ; for in some, and particularly in young persons, very small quantities suffice to cause depression and irritability of the nervous system, the heart's action, and the digestive and other powers ; while others, especially those who lead an open-air life, are not in the least affected by very large amounts. Generally speaking, excessive smoking is a hurtful thing, particularly for young people, and a liberal allowance of tobacco for a healthy, full-grown man is usually fixed at a maximum of four ounces in the week.

Among the evil effects of smoking may be mentioned the temporary nausea, depression, giddiness, and vomiting which affect the unaccustomed smoker. These effects, however, pass off quickly, and the tendency to their occurrence disappears as the person becomes habituated to tobacco. Of more importance is the group of symptoms produced by continued and excessive smoking, especially of cigarettes. These include palpitation and irregularity of the heart, giddiness, and a tendency to sudden attacks of faintness, symptoms often grouped together under the popular name of ' tobacco heart '. Other common symptoms are liability to fatigue on slight exertion, dyspepsia, and dimness of vision associated with impairment of power for

TOES

seeing colours, especially green and red. These symptoms also pass off gradually when smoking is discontinued, or when the amount of tobacco consumed is reduced within suitable bounds ; but, while they last, they cause great impairment of the health, and the partial blindness is very liable to continue for long.

Another set of symptoms consists of irritable cough, soreness of the throat, and enlargement of the tonsils, liable to become worse in damp weather. These symptoms also pass off when smoking is discontinued, or some change is made in the method of smoking.

Acute tobacco-poisoning seldom occurs, though it has sometimes been caused by a child having eaten some tobacco. The symptoms are the same as those that affect the unaccustomed smoker. The treatment to be adopted resembles that for poisoning by opium and other narcotics, including the administration of an emetic, if tobacco has been swallowed, followed by strong tea, coffee, or other stimulant.

TOES (*see* CORNS, FEET, NAILS, DISEASES OF).

TONGUE.—The tongue is made up of several muscles, is richly supplied with blood-vessels and nerves, and is covered by highly specialised mucous membrane. It consists of a free part known as the 'tip', a 'body', and a hinder fixed part or 'root'. The under surface lies upon the floor of the mouth, while the upper surface is curved from side to side, and still more from before backwards so as to adapt it to the shape of the mouth. At its root, the tongue is in contact with, and firmly united to, the upper edge of the larynx ; so that in some persons who can depress the tongue readily the tip of the epiglottis may be seen projecting upwards at its hinder part.

Functions.—The chief uses of the tongue are of three kinds: (a) To push the food between the teeth for mastication, and then mould it into

TONSILS

a bolus preparatory to swallowing ; (b) as the organ of the sense of taste ; and (c) to play a part in the production of speech.

TONGUE, DISEASES OF (*see* MOUTH, DISEASES OF).

TONGUE, FURRING OF (*see* MOUTH, DISEASES OF).

TONICS are remedies which gradually restore the muscles, nerve-cells, and various bodily organs from a lax and sluggish state to a condition in which they are ready for immediate activity. The term, like the name stimulants, is very vague, but while stimulants cause immediate increase of activity, tonics act more slowly and give a sense of increased well-being and strength.

Among the generally useful tonics are the following. In children and young persons of feeble physique or after some acute illness, the compound syrup of the phosphate of iron (Parrish's Syrup) or the syrup of the iodide of iron is very suitable. In adults whose nervous system is overworked and digestion out of order, the compound syrup of the hypophosphites (Fellows's Syrup) acts extremely well. Where a more powerful tonic, acting more speedily, is desired, the syrup of the phosphate of iron with quinine and strychnine (Easton's Syrup) is also useful. Any of these tonics should be taken in a large quantity of cold water immediately after a meal.

Although tonics form a valuable class of remedies, their employment may be a source of danger through conferring an artificial sense of well-being upon a person who stands in need of more energetic treatment or of complete rest, as, for example, a person suffering from neurasthenia or early consumption. In such a case the mere use of tonics, although it enables the person to go about his usual pursuits for some time longer, leads in the end to a more complete breakdown.

TONSILS are two almond-shaped glands situated one on each side of

the throat. Each has a structure resembling that of a lymphatic gland, and consists of an elevation of the mucous membrane presenting twelve to fifteen pits or 'lacunæ'.

TONSILLITIS, or **TONSILITIS**, means inflammation of the tonsils and may be either acute or chronic.

ACUTE TONSILLITIS, or **QUINSY**, may be of several types. Thus the gland tissue of the tonsil may be affected, or the inflammation may be situated in the fibrous tissue around it. Again, the condition may result in an abscess, or, in very severe cases, ulceration may take place on the surface of the tonsil.

Symptoms.—The symptoms come on somewhat suddenly and sharply, with chill followed by fever, the temperature frequently attaining a high elevation (104° or 105° Fahr.). Pain in the act of swallowing is experienced from the outset. The inflammation is usually at first confined to one tonsil, but on examining the throat there is seen to be considerable redness and swelling of the whole surrounding mucous membrane, while a copious secretion accumulates at the parts, and causes much discomfort. The tongue, too, is covered in general by a thick, creamy fur, and the breath has an offensive smell. The act of swallowing becomes increasingly difficult, and fluids are apt to return through the nose. Pain is felt towards the ear, the glands in the side of the neck being often hard and enlarged. In a few days the inflamed tonsil may show signs of suppurating, and an abscess is seen bulging forward into the mouth. When this bursts or is opened, speedy relief is obtained, and the patient is soon restored to his usual health. Occasionally, however, the inflammation passes from the one tonsil to the other. An attack of quinsy rarely lasts beyond a week or ten days, and is not as a rule attended with any danger to life, though valvular disease of the heart sometimes follows.

Treatment is much the same as that for an ordinary cold, confinement to the house, the employment of diaphoretic medicines, together with light diet, being all that is necessary as regards general management. (See CHILLS AND COLDS.) At the very beginning of a sore throat of this nature, lozenges containing chlorate of potash and guaiacum appear often to be highly beneficial in cutting short the attack. Black-currant jelly is a household remedy which seems to be of some efficacy also. In rheumatic cases the remedies for acute rheumatism give much relief, and a brisk purgative is often very helpful. It is almost impossible to gargle when the tonsils are much enlarged, but hot milk or gruel may be sipped and held as long as possible in contact with the throat. A spray of menthol will give partial relief when the person has to go about, and this drug also seems to exert some check upon the inflammatory process. Warm applications to the outside of the neck, as well as the above warm articles of food, give much relief.

When an abscess is forming, it may be punctured, and this procedure gives immediate relief if pus is present.

CHRONIC TONSILLITIS is a very common condition in delicate children, the tonsils being much enlarged, slightly inflamed, and very liable to attacks of acute inflammation. In some cases the substance of the tonsils is chiefly inflamed (*follicular tonsillitis*), in others the openings in the tonsils are filled with cheesy-looking, decomposing material which gives to the breath a very offensive smell (*lacunar tonsillitis*). In the first-mentioned form of chronic tonsillitis the adenoid formation on the back of the throat is enlarged, as a rule, along with the tonsils. In this case the three projecting masses cause great narrowing of the air passage, shortness of breath, mouth-breathing, and other evils. This con-

dition is described with reference to the symptoms and treatment of 'adenoids' under **Nose, Diseases of**. In lacunar tonsillitis, when offensive masses collect in the tonsils, these may be gradually removed by swabbing the tonsils night and morning with considerable pressure. For this purpose a piece of cotton-wool is rolled round a wooden rod and dipped in peroxide of hydrogen solution. It is then pressed hard with a rubbing motion against the tonsil. If the condition persists, relief may be obtained by removing the tonsils.

When enlargement of the tonsils is not sufficiently great to call for removal, it is treated by remedies which promote the general nutrition, like cod-liver oil, iron, etc., by various gargles (*see GARGLES*), and by astringent applications such as a paint of iodine in glycerin (Mandl's solution). This is painted with a brush night and morning upon the tonsils.

TOOTHACHE (*see TEETH, Diseases of*).

TOURNIQUET is an instrument used for the temporary stoppage of the circulation in a limb, so that bleeding may be controlled. (*See HÆMORRHAGE*.)

TOXÆMIA is a vague term applied to mild forms of blood-poisoning, due to the absorption of bacterial products (toxins) formed at some site of infection. Inflammation of the gums, abscesses at the roots of teeth, and chronic inflammation in various internal organs, such as cystitis and colitis, are especially blamed in this connection. In other cases the toxæmia is due to defective action of some excretory organ, such as the kidney. To the most severe forms, caused by the entrance of micro-organisms into the blood, the name of 'septicæmia' is given. (*See BLOOD-POISONING*.)

As regards treatment, the most important consideration is to remove the source of infection by extraction of teeth, relief of constipation, the

local application of antiseptic substances, etc. Vaccines made from the bacteria responsible for the inflammation are also sometimes used in the treatment of this condition.

TOXINS are poisons produced by the action of bacteria upon the tissues of the body or other material in which the bacteria develop. (*See SERUM*.)

TRACHEA is another name for the windpipe. (*See AIR PASSAGES*.)

TRACHEOTOMY is the operation in which the windpipe is opened from the front of the neck, so that air may obtain direct entrance into the lower air passages.

TRACHOMA (*see EYE DISEASES*).

TRADE DISEASES.—Many occupations are more arduous than others, or necessitate great exposure to the weather, or lead to irregularities in the matter of eating and drinking, so that those who pursue them are specially liable to suffer from minor illnesses or nerve strain. But beyond this, certain trades and professions bear a close relationship to certain definite diseases, which are therefore known as trade or occupation diseases.

Several forms of poisoning which are liable to be contracted by workmen in factories and workshops where these poisonous substances are used or manufactured are notifiable under the Factory and Workshop Acts in Great Britain. These are lead-poisoning, phosphorus poisoning, arsenical poisoning, mercurial poisoning, poisoning by carbon bisulphide, aniline, or benzene, silicosis, and the development of anthrax, toxic jaundice, and epithelioma or chronic ulceration occurring among workers in chrome factories.

Poisonous trades.—**ARSENIC** is a substance largely used for many purposes. Thus the smelters of ores containing arsenic, the makers of green artificial flowers, wall-papers, painters of green china, and others who come in contact with Scheele's green, are liable to be affected by

TRADE DISEASES

eczema, neuritis, and other symptoms of chronic arsenical poisoning. (See NEURITIS.)

LEAD is a substance very widely used and very readily absorbed into the system, so that workmen who, at first sight, appear to have little or nothing to do with this metal may suffer from lead-poisoning. Thus, in addition to the makers of white lead, plumbers, and compositors who handle lead constantly, file-cutters who use a leaden cushion at work, house-painters who burn off old paint, glass-polishers and pottery-glazers who are apt to inhale lead-containing dust, are all liable to contract lead-poisoning if they do not adopt proper precautions. (See LEAD-POISONING.)

WOOLSORTERS are liable to suffer from the bacterial disease known as anthrax, either by getting bacteria of this disease into abrasions in the hands, or by inhalation of its spores on dust off the fleeces. This is prevented to a large extent by handling the fleeces wet so that the production of the spores is prevented.

CHROME WORKERS are liable to suffer from a chronic form of ulceration which is particularly liable to take on cancerous growth, producing epithelioma. A similar result sometimes occurs among workers in soot, paraffin, coal-tar, and other irritating substances.

GLASS-BLOWERS, partly on account of the heat amid which they work, partly owing to the strain of blowing, suffer from bronchitis and emphysema, and are also liable to deafness. Iron-workers, partly in consequence of their laborious work, partly owing to the habits of intemperance which this is apt to induce, seem specially liable in later life to contract valvular heart disease, and to suffer from increase in size and force of this organ. (See HEART DISEASE.) Persons working among irritating particles and constantly inhaling them are more than ordinarily liable to contract

TRAUMA

consumption; among these trades may be mentioned those of stone-cutters, potters, steel-grinders, cotton-workers, flax-workers, flour-millers.

Spasms and paralyses are liable to affect those whose occupation requires the constant use of one muscle or group of muscles to perform the same action over and over again. Among these *occupation-neuroses*, as they are sometimes called, may be mentioned writer's cramp (see CRAMP), typewriter's cramp, telegraphist's cramp, hammerman's palsy, and the spasmodic wry-neck of shoemakers, saddlers, and book-folders.

TRAINING (see DIET, EXERCISE).

TRANSFUSION OF BLOOD is an old method of restoring a person believed to be dying by passing blood from another person into his veins.

Apart from the difficulty caused by the tendency to clot, a great objection to transfusion is that the corpuscles are liable to break up in the new circulation into which they are introduced; and the person into whom the new blood is transfused may suffer to a dangerous degree from symptoms such as nettle-rash, difficulty of breathing, purging, and signs of shock, while the immediate destruction of the red blood corpuscles leads to the passage of blood pigment in the urine and jaundice in some cases. A fatal result may quickly supervene. To avoid this it is necessary to find out that the blood of the 'donor' is compatible with the blood already in the circulation of the 'recipient'. This is readily determined by a simple test.

After severe bleeding, it is more common to use a normal warm salt solution or glucose solution or a 6 per cent gum acacia solution, which produces a good temporary effect and avoids the difficulties of obtaining and transfusing blood.

TRAUMA, TRAUMATIC are terms used to indicate disorders due to wounds or injuries.

TREATMENT.—Special forms of treatment are considered under such headings as DIET, ELECTRICITY IN MEDICINE, LIGHT TREATMENT, SERUM, PROTEIN THERAPY, etc. The treatment appropriate to each disease will be found under the headings of the various diseases.

TREPHINING, or **TREPANNING**, is an operation in which a portion of the skull is removed. Originally the operation was performed with an instrument resembling a carpenter's brace and known as the trephine or trepan, which removes a small circle of bone; but now this instrument is used only as a rule for making small openings, while, for wider operations, gouge forceps, circular saws driven by electric motor, or wire saws are employed in order to give greater ease and speed.

TRICHINOSIS is the name of a disease set up by eating diseased pork infected by a worm. (See WORMS.)

TROCAR is an instrument provided with a sharp three-sided point fitted inside a tube or cannula, and used for puncturing cavities of the body in which fluid has collected.

TRUSS is an instrument used to support a hernia.

Varieties of truss.—The nature of trusses varies according to the situation of the opening which the truss has to cover; but every truss possesses a pad of some sort to cover the opening and a belt or spring to keep it in position.

VENTRAL TRUSSES intended for a hernia protruding through the wall of the abdomen, either at the navel or at some weak spot caused by a strain or by a wound, consist of a large flat pad kept in position by a belt passing round the waist.

INGUINAL TRUSSES are much more commonly required than any other, and though many forms are made by different makers, all possess an oval obliquely placed pad with a spring pressing upon it. In the *ordinary*

truss, there is a spring firmly fixed at one end to the pad, from which it passes right round the waist, to be bound at the other end by a short strap to the pad. Also there is a short strap passing down between the legs and fastened to the truss before and behind so as to keep the pad from slipping upwards as the person moves. This is one of the cheapest and most generally used forms. The *Mocmain truss* differs from the ordinary truss in having a soft band to go round the waist and a short lever-spring to press upon the pad. The *Salmon and Ody truss* has a large pad pressing upon the small of the back, a wide spring which runs right round the side of the body opposite to that upon which the hernia exists and crosses to the hernia, upon which it presses by a large pad with a ball-and-socket joint. *Double trusses* are often worn. They are fashioned like the ordinary truss, but have a pad for each side, and are advisable in the case of very stout people, in whom the retention of a hernia upon one side is sometimes apt to produce a hernia at the other side. *Bath trusses* are made of vulcanite, india-rubber, lacquered metal, and other materials which will not spoil by wetting. Such trusses are also convenient for children, and many people who perspire copiously prefer them for general use. *Bag trusses*, consisting of a hollow pad kept in position by belts, etc., are sometimes necessary for the protection of a hernia which cannot be reduced.

FEMORAL TRUSSES are made in various forms similar to those of inguinal trusses. The pad, which comes down on the thigh, is small and triangular so as not to press upon the femoral vessels. Such a truss is difficult to keep in position, and this is sometimes effected by having attached to the pad a thigh-piece which can be laced on the outer side of the thigh.

TRYPARSAMIDE is a complicated

TUBERCLE

organic preparation of arsenic used for the treatment of affections of the nervous system caused by syphilis.

TUBERCLE is a term used in two distinct senses. As a descriptive term in anatomy, a *tubercle* means a small elevation or roughness upon a bone, such as the tubercles of the ribs. In regard to disease, a *tubercle* is a small mass, barely visible to the naked eye, formed in some organ as the starting-point of the disease which is now known as tuberculosis. The name of *tubercle bacillus* is given to the micro-organism that causes this disease.

TUBERCULIN is the name given to preparations derived from the tubercle bacillus and intended for the diagnosis or cure of tuberculosis. The original tuberculin, introduced by Koch in 1890, did not fulfil the hopes regarding it, and in fact often produced disastrous results owing to its injudicious use.

Since that time various modifications have been introduced for curative purposes. Some forms of tuberculin are used for the diagnosis of the disease both in veterinary and in human medicine.

TUBERCULOSIS is the general name for the whole group of diseases associated with the presence of the tubercle bacillus, of which consumption is the most important. (See CONSUMPTION, JOINTS, DISEASES OF.)

Tuberculosis not only affects the lungs, but may invade almost any organ, being, however, seldom found in the muscles (a fact of much importance in the prevention of the disease), or in tissues with few blood-vessels, like cartilage and sinews. The severity of the disease varies considerably, according to the organ attacked—thus tuberculosis of the bowels produces even more speedy consumption than the lung disease, while tuberculosis affecting the membranes of the brain and causing meningitis is almost always rapidly fatal. Chronic inflammation of bones

TURPENTINE

and white-swelling of joints are also manifestations of the disease, having, however, less influence upon the general health. The enlargement of glands, most common in the neck, to which the name of *scrofula* was formerly given, is a well-known form of tubercular disease. Almost all chronic abscesses are tubercular in origin, arising from this affection in a bone, a gland, or the cellular tissue. Finally, the disfiguring skin disease known as *lupus* is another of the manifestations of the disease.

TUMOR means any swelling of a permanent nature.

An old idea divides tumors into two great classes. On the one hand, some are *simple* or *benignant*, growing slowly at one spot, pressing neighbouring parts aside but not invading them, not recurring after removal, and having little tendency to ulcerate; while others are *malignant*, spreading quickly from point to point, invading and destroying surrounding tissues, tending to recur after apparently complete removal, and being very liable to ulcerate. Though in the majority of cases it is easy to decide whether a given tumor is of simple or malignant character, there is no sharp dividing line between the two kinds. (See CANCER.)

TUNNEL WORM is another name for the ankylostoma. (See WORMS.)

TURPENTINE is the oleo-resin which exudes from trees of the pine family when the bark is injured. The oil distilled from this is known as oil of turpentine, rectified turpentine, or spirit of turpentine, the residue being the resin or rosin.

Externally, turpentine is largely used as a counter-irritant. It forms one of the most common ingredients of liniments and embrocations for application to sprains and bruises. It is used with hot fomentations when a specially strong action is desired, a fomentation sprinkled with turpentine being known as a 'stupe'. (See FOMENTATIONS.) In chronic bron-

TWILIGHT SLEEP

chitis, rubbing the chest with turpentine is a favourite household remedy which is often beneficial.

In lumbago and other forms of chronic rheumatism, 5 drops of turpentine taken upon a lump of sugar thrice daily over a long period is an old household remedy which is often very effective after all other means of cure have failed. As an enema, an ounce of turpentine may be mixed with half a pint of soapy water in order to relieve flatulence.

TWILIGHT SLEEP is the name given to a method of anæsthesia sometimes used in surgical operations but particularly in childbirth. The unconsciousness of pain is brought about by the hypodermic injection of morphia and hyoscine. There are serious drawbacks connected with its use, of which the chief are that

TYPHUS FEVER

the expulsive efforts of the womb are weakened and the labour thereby prolonged, that bleeding is apt to be more profuse in consequence, and that the child is apt to be prejudicially affected, especially in that there is sometimes difficulty in getting it to commence breathing immediately after it is born.

TYPHOID FEVER (*see* ENTERIC FEVER).

TYPHUS FEVER is a continued fever of highly contagious nature, lasting for about fourteen days and characterised mainly by great prostration of strength, severe nervous symptoms, and a peculiar eruption on the skin. It has received numerous other names, such as spotted, pestilential, putrid, jail, hospital fever, etc. It is of rare occurrence now in Britain.

U

ULCER means a break on the surface of the skin or on the surface of the membrane lining any cavity within the body, which does not tend to heal quickly. The process by which an ulcer spreads and which involves the death of minute portions of tissue round its edge is known as 'ulceration'. The process of ulceration and that of abscess formation are the same, since both are inflammatory processes, though ulceration takes place along a surface from which its discharge escapes at once, while an abscess spreads in every direction from a centre and its products are for a time retained.

Varieties.—Ulcers are sometimes classified as *local* when they are found at one spot only, such as the varicose ulcer found on the lower part of the leg; and *constitutional* when there are usually several ulcers on different parts of the body, produced chiefly by some constitutional defect.

SIMPLE or SLOWLY HEALING ULCER is moderately red and slightly sunk, the skin around is healthy up to the margin of the ulcer, and at the edge there is a blue line, which is of great importance as showing the progress of the healing. Such an ulcer has a very slight white discharge and is quite free from smell.

INFLAMED ULCER is one which, as the result usually of the presence of bacteria, or in consequence of continued irritation, is still spreading. Such an ulcer is very red and bleeds easily, the skin around is red and swollen, there is a thick discharge of pus from the surface, and portions of the reddened skin at its edge or in its neighbourhood tend to die and thus form new ulcers. Such an ulcer, if it has become infected with very virulent bacteria, may involve the death of the patient.

CALLOUS ULCER is chronic, with thick, hard edge, pale colour, and a discharge that is thin and small in

amount, though often very offensive in smell.

VARICOSE ULCER may belong to any of the above types. It generally comes on as the result of scratching the skin of a leg which has been rendered eczematous by the bad circulation. It will not heal so long as the patient walks about, and has a great tendency to develop into a callous ulcer.

INTERNAL ULCERS develop sometimes in the mouth (*see MOUTH, DISEASES OF*); in the stomach (*see STOMACH, DISEASES OF*); and in the bowels (*see INTESTINE, DISEASES OF*).

CONSTITUTIONAL ULCERS are generally the result of some widespread weakening disease such as syphilis or tuberculosis.

MALIGNANT ULCERS are developed when a cancer spreads so as to involve the skin. Such an ulcer has often a very offensive smell, requiring the use of deodorant substances.

Treatment.—In treating an ulcer, three objects must be kept in view: (1) To remove the cause of ulceration; (2) to render the floor and edge of the ulcer healthy so that healing may commence; (3) to assist the healing process and ward off any source of irritation.

(1) **REMOVAL OF THE CAUSE.**—Any constitutional condition underlying the development of the ulcer must first of all be treated, because otherwise the tissues surrounding the ulcer are unable to exert their power of healing. Thus syphilis or tuberculosis, if present, requires the careful nourishment and special remedies suited to these diseases, while old age, scurvy, diabetes, and other conditions demand appropriate treatment. Bodily rest is also of great importance for the healing of an ulcer; and especially is this the case in ulcers of the leg, where constant movement combines with bad circulation to prevent healing.

ULCER

Accordingly, large varicose ulcers may refuse to heal till the person takes to bed, but when this is done, improvement is often rapid.

(2) **RENDERING THE ULCER HEALTHY** aims at converting any of the severer forms, *e.g.* the inflamed, or callous ulcer, into the simple type, which is the first step necessary in the healing process. When the ulcer is *inflamed*, it must be treated with active antiseptics such as eusol solution, and the dressing covered by oil-silk or gutta-percha tissue. As soon as the ulcer has been purified, however, strong antiseptics must be discontinued, since they retard the healing process.

(3) **ASSISTANCE OF THE HEALING PROCESS.**—When the ulcer has been purified and its floor and edges rendered healthy, a very simple dressing must be used. The usual interval allowed to elapse between the successive dressings of a healing ulcer is two or three days, or less if there be much discharge. The ulcer must be washed with some mild fluid like weak boracic lotion, and strong lotions like carbolic are quite inadmissible for a healing ulcer. The best dressing is a piece of clean lint or gauze, but this should be kept from actual contact with the ulcer by a piece of oil-silk perforated here and there and just large enough to cover the red floor without touching the edge. At each dressing, the lint, etc., must be thoroughly soaked before removal, not pulled away roughly; otherwise the healing tissues, especially the 'blue line' at the edge, are damaged and torn. At each dressing, too, the piece of oil-silk is reduced in size. When an ulcer has become quite clean and is healing rapidly, one of the best forms of dressing consists of a weak boracic ointment spread on lint.

The healing of a large ulcer, after it has been rendered clean, may often be hastened by grafting its surface with skin from another part.

URÆMIA

For the treatment of internal ulcers, see under the headings of the organs in which they occur.

ULNA is the name of the inner of the two bones in the forearm.

ULTRA-VIOLET RAYS (*see* LIGHT).

UMBILICUS is another name for the navel.

UNCONSCIOUSNESS is a condition depending usually on some disorder of the brain, and may be of various degrees.

Treatment.—It is of the utmost importance to determine the cause of unconsciousness before proceeding to treat any given case. Fainting brings with it its own cure, and little is necessary beyond leaving the unconscious person recumbent. (*See* FAINTING.) The distinction of the effects of narcotic poisons from those of apoplexy is important, since in apoplexy the main requirement is absolute quiet, while in poisoning cases energetic treatment is necessary. (*See* APOPLEXY.) Unconsciousness due to compression of the brain, resulting from some severe injury to the head, demands careful watching and often requires the energetic treatment of trephining the skull in order to remove blood-clots, ligature torn blood-vessels, etc. The unconsciousness of uræmia due to Bright's disease is perhaps the form most liable to be mistaken or overlooked, but doubts as to this are set at rest by examination of the urine. In this case also, prompt treatment is essential if life is to be saved. (*See* BRIGHT'S DISEASE, URÆMIA.)

URÆMIA is the condition which results when the poisonous materials that should be passed from the body in the urine are retained in the blood.

Symptoms.—Uræmia is sometimes classed as *acute*, *i.e.* those cases in which the symptoms develop in a few hours or days, and *chronic*, including cases in which the symptoms are less marked and last over weeks, months, or years. There is, however, no dividing line between the two, for

URÆMIA

in the chronic variety, which may be said to consist of the symptoms of chronic Bright's disease, an acute attack is at any time liable to come on.

Headache in the front or back of the head, accompanied often by sleeplessness at night and drowsiness during the day, is one of the commonest symptoms, though it is apt to be attributed to some other cause. Unconsciousness of a profound type, which may be accompanied by convulsions resembling those of epilepsy, is the most outstanding feature of an acute attack and is a very dangerous condition. If the person lives through an acute attack, he may suffer later from blindness, deafness, delirium, or some mild type of insanity, characterised by delusions or by melancholia, or on the other hand he may make an apparently good recovery.

Another group of symptoms is associated with the lungs and may consist of great difficulty in breathing when the patient attempts to lie down, with repeated attacks resembling asthma.

Still another symptom, which often precedes an acute attack, is severe vomiting without apparent cause.

Treatment.—The treatment of the chronic type of uræmia includes all the measures which should be taken by a person suffering from chronic Bright's disease. In the acute form, treatment must be immediate and energetic if the patient's life is to be saved. It consists mainly in getting the skin and bowels to perform the functions which the kidneys are unable for the time to overtake. Hot-air baths, hot packs, and diaphoretic drinks act upon the skin, while smart purgatives like compound jalap powder produce watery movements of the bowels and so relieve the kidneys. The withdrawal of blood from the loins by cupping, helps also to diminish the congestion of the kidneys, and so enables these organs

URETHRA, DISEASES OF

to resume their normal activity. When convulsions are present, these are relieved by the inhalation of chloroform or administration of chloral.

UREA, or **CARBAMIDE**, is the chief waste product discharged from the body in the urine, being formed in the liver and carried to the kidneys in the blood. The amount varies considerably with the quantity and nature of the food taken, rising greatly upon an animal (protein) dietary. It also rises high during the continuance of a fever. The average amount secreted daily, during health, on a mixed diet is about 33 to 35 grams or slightly over one ounce.

URETER is the tube, about the thickness of a goose-quill, which on each side leads from the corresponding kidney down to the bladder.

URETHRA is the tube which leads from the bladder to the exterior, and by which the urine is voided. It is about 8 inches long in the male and $1\frac{1}{2}$ inches long in the female.

URETHRA, DISEASES OF.—The urethra being merely a tube is not liable to many diseases. The chief conditions, however, which cause pain in the urethra, or interfere with the passage of urine, are urethritis or inflammation of the mucous lining, and stricture or narrowing of the tube.

URETHRITIS is often difficult to tell from inflammation of the bladder (cystitis), which, however, it may accompany and of which it is frequently the cause.

Symptoms.—The symptoms consist chiefly in the constant oozing out of a small quantity of pus from the orifice of the urethra, a sense of scalding pain whenever urine is passed, increased redness of the mucous membrane as seen at the orifice, and tenderness along the course of the urethra. Subsequently, inflammation in neighbouring organs, *e.g.* the bladder, testicle, or even kidney, may be set up.

Treatment.—This varies with the cause of the inflammation, but in all cases the drinking of milk, water, and other bland fluids in large quantities is of advantage in order to flush out the urethra. The disease causing the inflammation requires special treatment according to its nature, and, in addition, recourse is often had to local applications such as bougies of cocoa-butter and iodoform, astringent injections, etc.

STRICTURE is an abrupt narrowing of the tube at one or more places.

Symptoms.—An organic stricture is of very slow development, and gives rise at first to few symptoms beyond those of the urethritis, etc., which cause it. As the stricture narrows, the stream of urine becomes smaller than natural, and there is straining and pain each time it is voided. Occasional attacks of spasmodic stricture are brought on by injudicious acts on the part of the person who already has an organic stricture; and this further narrowing of the tube causes complete stoppage of the urine for a time, accompanied by great pain, which results from distension of the bladder. After a stricture has lasted some years, unless it has been very carefully treated, and the person has led a well-ordered life, inflammation of the bladder almost certainly comes on, and the death of the patient may ultimately ensue from the spread of this inflammation upwards to the kidneys.

The existence, position, and calibre of a stricture are verified by the surgeon, who passes metal bougies of various sizes along the urethra.

Treatment.—The person who is the subject of a stricture must above all things live a moderate, well-regulated life, free from excesses of every kind. Highly spiced food, alcoholic beverages, and some forms of exercise, such as cycling and horseback riding, should be avoided. The diet should be simple and constipation must be prevented. By these means unneces-

sary irritation of the stricture is avoided, and thus spasmodic attacks with retention of the urine are warded off.

To check the gradual narrowing of the stricture some operative procedure is necessary, and, according to the situation and nature of the stricture, it is either *dilated* by means of bougies passed along the urethra, or it is divided by an operation. After-treatment, consisting in the passage of a bougie at regular intervals of some weeks or months, is necessary after an operation, in order to counteract the permanent tendency of the stricture to contract.

INJURIES TO THE URETHRA may follow a severe crush which has fractured the pelvis, or a fall astride of some object. The signs of this are the presence of blood in the water, or inability to pass water at all, after such an accident. The great risks are the occurrence of an abscess round the urethra, and the formation of a stricture at a later period.

URIC ACID is a crystalline substance, found as a urinary deposit presenting a supposed resemblance to cayenne pepper.

URINARY ORGANS form the system by which the urine is extracted from the blood, stored up, and from time to time discharged from the body. They comprise the two kidneys placed in the loins, two ureters leading from them to the bladder which is situated in the front of the pelvis, and the urethra which leads from the floor of the bladder out beneath the pubic bones to the exterior. (*See KIDNEYS, URETER, BLADDER, URETHRA.*)

URINE is the excretion produced by the kidneys, and consists chiefly of waste substances resulting from the activity of the body, dissolved in water. The urine and the perspiration are to a great extent interdependent; thus, if the kidneys are acting vigorously, the skin becomes very dry, while if there has been much perspiration, as in fevers, the urine is

small in amount and highly concentrated.

About 96 per cent of the urine is water, the remaining 4 per cent being solids dissolved in it. Of the solids, far the most important is urea, the daily output of which is somewhat over 1 ounce. Common salt stands next in quantity, its amount being about half that of the urea. Phosphates and sulphates are also important constituents, and there are small quantities of creatinine, uric acid, and ammonia.

Pigments are also present in the urine, and to them its colour is due.

The amount of urine passed daily is about 50 ounces, subject to the variations mentioned above. A child of course passes much less than an adult, and the general statement may be made that under the age of twelve years a child passes daily 2 ounces of urine for every year of its age, an infant of two years, therefore, passing 4 ounces of urine daily, while a child of five years passes 10 ounces daily.

The amount of urine is *increased* in some diseases, of which diabetes, chronic Bright's disease of the cirrhotic type, and hysterical conditions may be mentioned as the chief. In other conditions it is *diminished*, notably in acute Bright's disease, in fevers and feverish states generally, and in heart diseases.

COMPLETE STOPPAGE of the urine may occur for a time in the feverish conditions of children, or it may be due to acute Bright's disease, when the condition is a very serious one. When the stoppage is due to failure of the kidneys to secrete any urine, the condition is known as *suppression*. When the stoppage is due to such a cause as blockage by a stricture, although secretion by the kidneys still goes on, it is known as *retention*. Stoppage of the urine, to whatever cause it be due, may often be relieved by placing the patient in a hot bath and administering to him sweet spirits of nitre or other diaphoretic.

Colour.—The tint of normal urine is generally described as straw or amber coloured, but it may be considerably changed by various diseases or drugs.

PALLOR, giving the urine a watery appearance, is found in diabetes, and in chronic Bright's disease, also in persons who drink large quantities of water.

ORANGE OR RED COLOUR may appear when senna or rhubarb has been taken; when blood is present the colour may be pink or bright red; urates cause a turbid red or yellow appearance.

GREEN OR GREENISH-YELLOW urine is usually due to bile, or may be produced by taking *santonin*.

BLACK URINE is most commonly due to absorption of carbolic acid from surgical dressings or from taking carbolic acid, lysol, or similar substances internally. It is often passed by those who are taking *guaiacol* or *creosote*, *e.g.* consumptives.

Reaction.—When the urine is tested with litmus paper it is found to be distinctly acid in general, and this is of importance, because the acid has an antiseptic action. In herbivorous animals and in vegetarians, owing to the great quantities of alkaline salts eaten in the diet, the urine is permanently alkaline.

Deposits.—In healthy urine there is usually a fleecy deposit of mucus secreted by the mucous membrane of the urinary passages. A pink or yellow deposit, that settles as soon as the urine begins to cool, and that often leaves a stain upon the utensil in which the urine has stood, is due to urates. Uric acid is a rare deposit, and, when present, falls in very scanty yellow or brownish grains. A white deposit that collects upon the bottom of the utensil after the urine has stood undisturbed for some time may be due to phosphates, to pus, or to debris from diseased kidneys known as *tube-casts*.

Abnormal substances.—Many unusual substances taken into or formed in the body are got rid of in the urine,

URINE, EXCESS OF

sometimes just as they have entered the body, in other cases considerably changed, *e.g.* drugs, and the poisons of various diseases. Further, various bacteria and parasites can be discovered in the urine in some diseases. Elaborate chemical or microscopical examination is necessary in order to reveal these, but there are six substances whose detection is of great importance, and which are discovered with comparative ease. These substances are (1) albumin; (2) blood; (3) sugar; (4) pus and tube-casts; (5) bile; (6) acetone.

URINE, EXCESS OF.—The amount of urine passed in 24 hours is often markedly increased in diabetes, a fact which sometimes, without any other symptom, attracts the patient's attention. The bladder requires to be emptied more than usual also in the chronic forms of Bright's disease, but this is due rather to greater frequency than to increased quantity of urine. The increase in this case is noticed especially during the night. Any source of irritation or inflammation in the kidneys or bladder may also produce this symptom, such as the formation of gravel or of a stone, tuberculosis of the kidney, inflammation of the bladder (cystitis), or enlargement of the prostate gland. The bladder, however, varies greatly in size in different individuals, and the necessity to pass water frequently may simply be a life-long personal peculiarity due to smallness of its capacity.

An annoying form of increase in the urine at night leads to wetting of the bed by children (enuresis).

Treatment.—Any increase in the amount or frequency of the urine calls for testing as to the presence of sugar, albumin, gravel, pus, etc. The treatment consists in that suited to any disease that may be discovered. For irritable conditions of the bladder or prostate gland, bromide of potassium, in a dose of 5 or 10 grains at night, often gives relief.

URINE, RETENTION OF

In children who wet the bed, the condition may be allied to dreaming, and the avoidance of a meal, and especially of fluid late at night, together with waking the child in the middle of the night to pass water, often serves to break the habit. Bromides, belladonna, thyroid extract, and, in boys, the operation of circumcision, are other remedies often employed.

URINE, RETENTION OF.—The term 'retention' is applied to cases in which urine is duly secreted by the kidneys, but for some reason is retained in the bladder; while the more serious condition, in which the kidneys fail to produce urine, is known as 'suppression'. The latter condition is mentioned above under URINE.

Treatment.—Cases in which retention is due to weakness of the bladder, in a chronic invalid, are treated by the regular use of a soft rubber catheter, and this forms one of the most important duties in the nursing of such a case.

In any case of retention where the urine accumulates in and causes painful distension of the bladder the condition may often be relieved by the sufferer placing himself in a warm bath. This produces so much relaxation that the bladder often succeeds in emptying itself, a result which is still further assisted by the use of soothing draughts or of suppositories containing morphia or belladonna.

If relief is not gained by these means, the medical attendant withdraws the urine by means of a catheter passed along the urethra (*see* CATHETERS), and it may occasionally be necessary to tap the bladder above the pubis by means of a hollow needle. After its contents have escaped the patient gains immediate relief and can generally pass urine, when it next becomes necessary, by natural means.

In the cases which require the

habitual use of a soft or flexible catheter, such as those due to an enlarged prostate gland, the patient himself can readily learn to pass the instrument. It is of great importance that the most scrupulous cleanliness should be maintained. (See CATHETERS.)

UROTROPINE (see HEXAMINE).

URTICARIA is another name for nettle-rash.

UTERUS, or **WOMB**, is a hollow organ suspended in the cavity of the pelvis. In shape, it is triangular from side to side, and flattened from before backwards. The lower angle is prolonged into a rounded neck (*cervix*) which communicates through a narrow opening or mouth with the vagina, the passage leading to the exterior of the body. In size, the normal uterus is only about 3 inches long, 2 inches in its greatest width, and 1 inch in thickness from front to back, while the walls are so thick that the cavity consists of a mere slit. During pregnancy, however, it enlarges to an enormous extent, and the walls increase still further in thickness. The cavity is lined by a thick, soft, mucous membrane, and the wall is chiefly composed of muscle fibres arranged in three layers. The outer surface, like that of other abdominal organs, is covered by a layer of peritoneum.

UTERUS, DISEASES OF.—Most diseases of this organ are of a chronic type, occur in married women, and though their symptoms in the great majority of cases are not of an extreme nature, they are apt to constitute a drain upon the general health. Among the most common symptoms may be mentioned pain or irregularity in the menstrual functions, the presence of a white discharge (*leucorrhœa*), constant pain or sense of weakness in the back, and often the inability to bear children.

MALFORMATIONS sometimes occur and give rise to trouble in childbirth. The cervix may be long and furnished with a very narrow

mouth, which is sometimes a cause of pain in menstruation. Wasting of the uterus occurs in some diseases, e.g. after severe illnesses, after childbirth, etc. Overgrowth in size may also occur, usually as the result of chronic inflammation.

DISPLACEMENTS are of more importance. The uterus is slung in the centre of the pelvic cavity, and has great freedom of movement up and down and from before backward. It stands naturally with its long axis directed upwards and forwards between the bladder and rectum, but its position at any time varies considerably according to the state of distension of one or other of these organs. A flabby state of the muscular wall of the uterus, or a contraction of some of the ligaments that suspend it, may produce a bend upon the organ itself, or may permanently tilt it forwards or backwards. In the treatment of these conditions, two objects are kept in view, the one being to diminish the inflammation that is apt to accompany them, and the other consisting in the support of the uterus in its proper position by a suitably shaped instrument known as a pessary; or by an operation, when the displacement is very marked.

Downward displacement is known as *prolapse*, and in this condition the uterus slips bodily downward in the space between the bladder and bowel, till, in bad cases, it may actually protrude from the vagina. The condition comes on in elderly women, usually those who are becoming stout, have a considerable amount of work to do, and have in childbirth suffered tearing of the parts that should support the uterus. When the condition is slight it is relieved by wearing a suitably shaped pessary, and in cases which are not relieved by this simple measure an operation designed to repair the injury previously done, will often remedy the displacement.

UTERUS, DISEASES OF

INFLAMMATION is, perhaps, the commonest type of uterine disorder. It is of several forms, but the general term *endometritis* is applied to inflammation affecting the mucous membrane. This condition is frequently due to childbirth which has not passed off quite successfully; and it is still more often due to miscarriage. Exposure to cold at a menstrual period, inflammation spreading upwards from the vagina, and displacements of the uterus are other, though less common, causes. The usual treatment consists in rest, the employment of hot, antiseptic douches and other applications to the vagina, and various remedies to improve the general health, such as tonics, baths, change of air. The interior of the uterus can often be brought quickly to a healthy condition by the operation of 'cureting', which consists in scraping away the unhealthy mucous membrane with a special instrument, the 'curette', and thereafter wiping the interior with some powerful antiseptic, such as pure carbolic acid. After this operation the patient must observe the greatest caution till the next menstrual period shall have passed.

TUMORS of the uterus are by no means uncommon. *Fibroid tumors* form the commonest variety, and consist of balls of muscle fibres similar to those of which the uterine wall is composed. These tumors are

UVULA

most common between the ages of thirty and forty years. Their chief symptoms are menstrual irregularity, sterility, and, if the tumor be large, interference with neighbouring organs upon which it presses. Many women, however, although having such a tumor, go through life without experiencing much discomfort from it, though if the tumor be very large it may be dangerous on account of the bleeding it occasions. The treatment is, first of all, medicinal—ergot, hazeline, and bromides having some influence in decreasing the size of and checking the bleeding from the tumors. X-ray and radium treatment prove successful in some cases where operation is undesirable. Surgical treatment consists generally in opening the abdomen and removing the tumor with part or the whole of the uterus, since only very small tumors can be removed by way of the natural passages.

Cancer of the uterus also occurs, especially after the menopause, and gives rise to severe pain and copious bleeding from time to time, but, fortunately, it commences usually at the neck of the womb, so that the condition lends itself to early diagnosis, at a stage when removal or treatment by radium promises success.

UVULA is the small mass of muscle covered by mucous membrane that hangs down from the middle of the soft palate.

VACCINATION means inoculation with the material of cow-pox, performed for the purpose of affording protection to the inoculated person against an attack of smallpox, or at all events with the view of diminishing the seriousness of and averting a fatal result from any such attack. The material now used is 'glycerinated calf-lymph', obtained by inoculating healthy calves with lymph derived from cow-pox, and afterwards adding glycerin to the material got from the vesicles. The glycerin has the effect of destroying any disease-producing organisms that may be present, and thus of rendering the lymph harmless.

Method of vaccination.—In the United Kingdom every parent is required by law to have his child vaccinated before it has reached the age of six months, with the exception that any parent who has conscientious objections to the practice is not punished for failure to have it performed.

If the child suffers from any skin disorder, or from diarrhoea, or if there is any severe epidemic in the neighbourhood by which the child is likely to be infected, vaccination should be delayed till the child is better. If, however, there be smallpox in the child's vicinity, nothing should interfere with its vaccination.

The arm or other part is carefully washed and dried, vaccine matter from a tube is placed upon it, and the vaccinator, using a blunt lancet or needle which has been carefully sterilised, scarifies the surface. The lymph is then allowed to dry, and the part is either covered by a simple dry dressing or is left exposed, care being taken not to wet it. No change is noticed till about the third day, when a slight elevation appears at the vaccinated spots. After a week the inflammation subsides, the vesicle at the end of a fortnight dries up and

forms a hard brown scab, which falls off about the end of the third week, leaving a permanent, depressed scar.

VACCINE is the name applied generally to a substance of the nature of dead infectious material introduced into the body with the object of increasing its power to resist or to get rid of a disease.

In some cases healthy people are inoculated with vaccine as a protection against a particular disease. In other cases a vaccine is used to cure acute inflammation already fully developed; it is supposed to stir up the general resisting power of the whole body to overcome what has previously been a limited condition.

Vaccines may be divided into two classes: 'stock' vaccines prepared from bacteria known to cause a particular disease and kept in readiness for use against that disease; and 'autogenous' vaccines prepared from bacteria which are already in the patient's body and to which the disease is due. Vaccines intended to protect against the onset of disease are necessarily of the 'stock' variety.

The principal vaccines used for the prevention of disease in human beings are the following.

Catarrhal vaccine is used as a preventive of colds, bronchitis, and influenza for persons who are liable to take these and similar catarrhal attacks every winter. Such a vaccine is usually administered once a week for several weeks.

Cholera vaccine and *plague vaccine* are used in the East when epidemics of these diseases are threatening.

Typhoid and paratyphoid vaccine, known for short as T.A.B. vaccine, is used for the protection of persons proceeding to a country where these diseases are rife, for example, to India. The protective inoculations are usually two or three in number, administered at intervals of a week or ten days.

VAGINA

Vaccines prepared from the gonococcus, hydrophobia material, and pneumonia organisms are used in the treatment of these diseases.

Whooping-cough vaccine is prepared from the organism found in this disease, and is used for the prevention and treatment of whooping-cough in schools and similar institutions.

VAGINA is the name given to the front passage leading from the exterior to the womb. Its chief disorder is inflammation. (See WHITES.)

VALVES are found in the heart, veins, and lymphatic vessels, for the purpose of maintaining the circulation of the blood and lymph always in one direction. (See HEART, VEINS.)

VALVULAR DISEASE (see HEART DISEASES).

VARICELLA means chicken-pox.

VARICOCELE means a condition in which the veins of the testicle are distended. (See TESTICLE, DISEASES OF.)

VARICOSE VEINS are veins that have become stretched and dilated. (See VEINS, DISEASES OF.)

VARIOLA is another name for smallpox.

VASELINE is the name given to a soft paraffin which is extensively used as a protective coating to superficial wounds, as a lubricant for instruments, and as a basis for ointments. It possesses the valuable property of being unchanged by the action of bacteria, so that it neither allows of the growth of organisms that happen to fall upon it, nor does it become rancid. (See PARAFFIN.)

VEGETARIANISM means the principle of subsisting on a diet of vegetables. (See 'Quality of Food' under DIET.)

VEINS are the vessels which carry blood to the heart after it has circulated through the tissues of the body. In general the veins lie alongside corresponding arteries that carry outwards to the tissues the blood which afterwards returns by the veins. The

VEINS, DISEASES OF

veins are, however, both more numerous and more capacious than the arteries, and, as a rule, there are two accompanying veins for each artery of moderate size. In addition to these deeply placed veins, there are superficial veins in the limbs, which can be readily seen in their distended state lying immediately beneath the skin.

VEINS, DISEASES OF.—These vessels, like the arteries, are subject to few diseases, the chief being of a degenerative nature.

INFLAMMATION of a vein is a condition which is serious mainly on account of the clotting of blood that usually takes place within the inflamed part (thrombosis), and the risk that such a clot may break up and portions be swept away by the circulation to lodge in other vessels (embolism). *Phlebitis* is the name commonly applied to general inflammation of a vein.

Symptoms.—In a typical case, the skin near the inflamed vein becomes red; the affected part becomes hot, and indeed the general temperature of the body may sometimes be raised; there is swelling both around the vein and of the part beyond it, so that, if a vein in the leg be inflamed, the foot is swollen; finally, considerable pain and tenderness to touch are experienced along the vein. When a clot forms in the vein, as it commonly does, the vessel can be felt as a hard line, and this blocked condition may persist for the rest of life, the vein being converted into a firm, fibrous cord; or a passage may be tunnelled through the clot after the inflammation has subsided in the course of three or four weeks.

Treatment.—Mention has been made of the great danger attaching to an inflamed vein, viz. that a portion of the clot may become detached and may block up some of the arteries in a distant organ, causing great damage or even sudden death. For this reason it is essential that the patient should rest absolutely quiet in bed for several

weeks. At a later stage, when the inflammation is subsiding, glycerin of belladonna is a favourite application. A moderately severe attack of phlebitis generally passes off in three or four weeks.

VARICOSE VEINS are veins that have become stretched and dilated out of proportion to the amount of blood they have to carry. There are three positions in which the veins have a special tendency to become varicose. These are the veins about the lower end of the bowel, producing the condition known as hæmorrhoids or piles (*see* PILES); the veins of the testicle, producing varicocele (*see* TESTICLE, DISEASES OF); and the vein, with its branches, on the inner side of the leg, knee, and thigh. Only the varicose veins of the limbs are considered here, the others having been dealt with elsewhere.

Symptoms.—At first the only symptoms are a feeling of weight and aching in the limbs, accompanied sometimes by cramps. This is experienced either at night, after a long day's standing, or in the morning when the feet are first put to the ground. After the condition becomes marked, there is often swelling of the feet, especially above the ankles, that quickly disappears when the patient lies down. Varicose veins that have lasted many years are liable to become inflamed, and to produce eczema and ulceration of the skin. (*See* ULCERS.)

Treatment.—Varicose veins tend, when untreated, to become worse and worse.

PALLIATIVE TREATMENT.—In slight cases, it is often sufficient to avoid the use of garters, to remedy constipation, to avoid standing as much as possible, and, after the day's work is done, to sit with the feet elevated on a couch or chair. In more marked cases, some mechanical support for the superficial veins is necessary, in order to counteract the downward pressure of the blood in the vein, whose valves have become useless. For this purpose one

may use an elastic or crape bandage, or elastic stockings. Crape bandages are applied directly to the skin and should be put on before the patient sets the feet on the ground in the morning. Some persons find elastic stockings more comfortable than bandages. There must be no tight band at the top of the stocking, but slipping down may be prevented by suspenders; while, of the various kinds, the spiral silk elastic stocking is generally regarded as the best. For the treatment of varicose ulcers, *see* ULCERS.

Great success is now obtained from the injection, here and there into the veins, of some irritating substance, such as quinine-urethane. A clot forms at once in the vein, which later becomes solid. This treatment is practically painless and devoid of later discomfort.

The varicose veins may also be removed by operation.

WOUNDS IN VEINS are not in general serious; for, though a considerable amount of dark blood flows steadily from that end of the vein more distant from the heart, it can be stopped by gentle pressure, and soon ceases of itself. When a varicose vein ruptures, as it may do if an ulcer be present, the condition is more serious. This also can be checked easily by pressure above and below the wound. Another danger, attaching to wounds of the veins in the neck, is that air may be drawn into them by the act of breathing, and great interference with the circulation may ensue.

VENA CAVA is the name applied to either of the two large vessels that open into the right auricle of the heart.

VENEREAL DISEASES are certain contagious maladies which are, as a rule, communicated from one person to another by venereal intercourse. These diseases are three in number, viz. syphilis, soft sore, and gonorrhœa. (*See* articles under GONORRHOEA and SYPHILIS.)

VENESECTION means the with-

VENTILATION

drawal of blood by opening a vein. (See BLOOD-LETTING.)

VENTILATION.—In the ordinary dwelling-house, no special provision is usually made for the inlet of fresh air. The windows, doors, and spaces between the skirting boards and sashes act as inlets. The chimney provides the exit or exhaust. The chief objections, where there are no special inlets, are that one cannot control the source of the supply or ensure thorough mixture of the fresh and used air.

Inlets, if the air can be warmed, should be placed preferably at the floor level. In cold climates like that of Britain, however, if the air is not specially warmed, the inlet should be placed above the occupants, with the stream directed upwards so that it may at once be well mixed with the general air of the room. A convenient special form of inlet is provided by double windows, the lower sash of the outer window being raised, and the upper sash of the inner window lowered. The air then enters between the windows and passes into the room at the top. Hinckes Bird's method of raising the lower sash about 4 inches by an accurately fitting wooden board, gives an inlet between the two sashes of a window. This is both one of the simplest and best methods of ventilating a room. Louvres, preferably on the lowest pane of the upper sash, and Cooper's revolving glass discs covering or exposing holes in the window when required, are largely used. Windows with the upper portion hinged to fall inwards and thus directing the current upwards, are commonly employed. Tobin's tubes, frequently used, have the air entering through a perforated plate at the floor level, from which it is conducted by a tube of about 6 feet in height through the wall and up its inner side. Ellison's bricks are bricks pierced with conical holes which have a small opening to the outside and a wide opening to

VERONAL

the inside of the building. The air in this way is diffused as it enters. These bricks are much used for halls, stables, cowsheds, etc.

Outlets should be placed at the highest parts of the room, or, if they can be heated, at any part. They should be protected by cowls to aid suction by wind, and to prevent their being closed or acting as channels for rain.

In the 'sunlight gas burners' in public buildings the products of combustion are led off in an inner tube. This heated inner tube is encased in an outer one, which conducts off the foul air of the room. In M'Kinnell's circular tubes, we have both an inlet and an outlet. The inner tube is the longer, projecting both upwards and downwards, the lower end being flanged. The air enters by the outer tube, and is directed along the upper parts of the room by the flanges of the inner tube. The inner tube acts as the outlet.

Artificial ventilation consists in the propulsion into a building of the required fresh air, or the extraction of foul air, by mechanical means. Fan ventilators, driven by electricity, are now extensively employed for the ventilation of collieries, hospitals, halls, factories, tunnels, and large buildings.

The advantages of artificial ventilation are, the greater certainty that the source of fresh air is pure, the ease with which the supply can be regulated, filtered, warmed, or cooled, the more effective distribution of the air, and its independence of the weather conditions. The chief drawbacks to its adoption are the heavy initial outlay and the cost of maintenance.

VERMIN is a term applied in medicine to parasites on the surface of the body. (See INSECTS.)

VERONAL, or DIETHYL-MALONYL-UREA, is a hypnotic drug which acts with more certainty and less after-

VERTEBRA

depression than most other remedies for sleeplessness. This drug and some closely allied derivatives are known by a variety of names among which are 'barbitone', 'malonal', 'hypnogen', 'proponal', 'dormigene', 'dial', 'luminal', 'medinal', etc.

Veronal is given in doses of 5 to 8 grains, in a hot drink at bedtime.

VERTEBRA is one of the irregularly shaped bones that together form the vertebral column. (See SPINAL COLUMN.)

VESICAL is the term applied to structures connected with, or diseases of, the bladder. (See BLADDER.)

VICHY WATER is an alkaline mineral water from springs at Vichy in France, and is much used in rheumatism, diabetes, and various disorders of the stomach and liver.

VINCENT'S ANGINA is an inflammation of the throat resembling diphtheria, and often very foul smelling.

VISCERA is the general name given to the larger organs lying within the cavities of the chest and abdomen. The term viscus is also applied individually to these organs.

VISION, DISORDERS OF.—Many disorders which indirectly affect the power of vision owing to inflammation or to a painful condition of the eye have been mentioned under EYE, DISEASES OF. Here we shall consider more permanent and direct disturbances of sight under the heads of (a) Dimness of vision; (b) Colour-blindness; (c) Decreased vision field.

Dimness of vision.—The most frequent cause of dim vision, or even of total blindness, is some obstruction to the entrance of light through the parts that ought to be transparent.

CORNEAL OPACITIES may produce a ground-glass-like condition of the naturally transparent cornea, so that light is prevented from entering the eye. Thus a dark shadow or complete blindness is produced, according to the breadth and density of the

VISION, DISORDERS OF

opacity. Practically nothing can be done to remove dimness of vision due to this cause. The most common diseases leading to this condition are keratitis and corneal ulcers. (See under EYE, DISEASES OF.)

REFRACTIVE ERRORS produced by malformations of the cornea, the lens, or the globe of the eye, are by far the commonest causes of defective vision. They are also the most important, both because they cause great interference with the ordinary pursuits of life and may lead to a great degree of general ill-health, and still more because the recognition and appropriate treatment of these errors are easily effected by the expert. The varieties and treatment of refractive errors are dealt with under SPECTACLES.

CATARACT is an opaque condition of the lens coming on slowly, as a rule, in elderly people. Its symptoms, etc., are treated under CATARACT.

VITREOUS HUMOUR OPACITIES are apt to be seen as spots and strings by any one who looks steadily at a bright surface, particularly when the general health is not perfect. They need not cause any anxiety.

Colour-blindness is a much more common disorder than is generally supposed, being present to an appreciable extent in about one person out of every fifty, and much more common in men than in women. It is usually present from birth, and persists through life, though it may be acquired as the result of poisoning by various substances, notably by excessive tobacco-smoking.

Red-green blindness is the most common form, and is present in all grades of completeness, from that of a person for whom red simply loses its brilliance at a distance, to that of a person for whom vivid green and brilliant scarlet appear as one and the same colour.

The importance in testing for colour-blindness any one who is to be a signalman or engine-driver is evident.

VITAMIN

Decreased visual field is another form of visual defect. Complete blindness in one eye which has lasted since birth is frequently discovered only by accident in middle life, because the healthy eye has always had an unrestricted field. Another and rarer condition, which is more noticeable to the patient, consists in loss of one-half of the visual field, so that the person can see objects only at one side and must turn his head in order to see things at the other side. This is due to some defect in one half of the brain or in the optic nerves.

VITAMIN, or **VITAMINE**, is a term applied to a group of substances of unknown composition which exist in minute quantities in natural foods and which are necessary to normal nutrition. When they are lacking in the body, defective growth takes place in young animals, and in adults various diseases develop. There are several groups of vitamins. Fat-soluble vitamin A and fat-soluble vitamin D are concerned mainly with growth, and their deficiency causes a suspension of growth, a tendency to rickets, and certain other diseases. These vitamins are found abundantly in butter, yolk of egg, cod-liver oil, and animal fats generally, and to a less extent in vegetable fats. Vitamin D has been produced artificially by the action of ultra-violet rays, and can be added to various foods such as margarine, malt, etc., or can be administered as a medicine to children showing symptoms of rickets. Water-soluble vitamin B (also known as antineuritic vitamin) is important in maintaining bodily strength, and its deficiency results in forms of neuritis. This vitamin is found in the outer layer of cereals, which is removed in certain processes of milling, also in various vegetables, milk, eggs, liver, and pancreas. Water-soluble vitamin C (also known as antiscorbutic vitamin) is present to a large extent in fruits, such as oranges, lemons, limes, and in cabbage, and other green vegetables,

VOMITING

and its deficiency results in the disease known as scurvy. The lack of other vitamins is responsible for defective growth of bone, and in all probability for the occurrence of other diseases such as pellagra.

This question of vitamins indicates the necessity that part of the food should be fresh, such as eggs, milk, butter, and fruit.

VOMITING means the expulsion of the stomach contents through the mouth. When the effort of vomiting is made, but nothing is brought up, the process is known as 'retching'.

Characters of the vomit.—Food, more or less softened and made sour and bitter by digestion, constitutes the vomit in the simpler cases, such as those due to emetics, sea-sickness, bad smells, etc. It should be remembered that when milk is vomited up curdled, this indicates simply that the first step in its digestion has taken place, and it is a mistake to conclude, as is often done, that the curdling indicates some intolerance of the stomach for milk.

WATERY FLUID, brought up irrespective of meals, forms the vomit in nervous conditions; in weak states, for example, in the vomiting of bloodless persons, and at an early stage of pregnancy. When the vomiting continues long, it tends to bring up mucus and bile also.

MUCUS, when vomited in considerable amount in strings, and especially when sour in taste and brought up in the morning, is a sign of catarrh of the stomach, particularly that form associated with constant indulgence in alcohol.

BILE may be brought up by any long-continued attack of vomiting, after the contents of the stomach have been expelled and retching still continues, for example, in sea-sickness, or in migraine and other forms of nervous vomiting.

FROTHY MATERIAL, with a yeasty smell, which divides into three distinct layers, viz. froth on the surface,

VOMITING

and a sediment of undigested food, with a layer of clearer fluid between, is highly characteristic of the vomit from a dilated stomach in which fermentative dyspepsia is taking place.

BLOOD may be red in colour, and brought up mixed with the food or in clots; but, much more frequently, it is vomited as a brown granular material, very much resembling 'coffee-grounds'.

Treatment.—In the first place, the cause of the vomiting must be sought for, and in general this will be found to be some disorder of the stomach. If an indigestible meal have been taken some time previously, and its remnants be still loading the stomach, an emetic or a copious draught of warm water has the effect of getting rid of the indigestible material and allowing

VULVA

the irritation to subside. Various substances which have a soothing action upon the stomach may also be taken when the sickness continues, such as carbouate of bismuth, or a powder composed of rhubarb (2 parts), soda (2 parts), and bismuth (4 parts), in teaspoonful doses. When nothing can be retained in the stomach, the sucking of small lumps of ice often gives great relief.

The special measures applicable to sea-sickness are given under SEA-SICKNESS.

Fresh air is of great importance, and the drawing of deep breaths has a distinct effect in checking the tendency to vomit. Mental quiet and a darkened room also assist in soothing the nervous system.

VULVA is the general term applied to the external female genitals.

WAFER PAPERS are thin circular discs made of flour and water, which become pliable when wetted, and form a convenient wrapper for swallowing nauseous drugs without tasting them. For the method of use, see **POWDERS**.

WALKING is a very important sign of health and disease. From the firm, elastic step of a man in perfect health to the feeble shambling walk of the aged and debilitated, the various gradations give a good index of the energy of an individual. Children, as a rule, begin to walk between the ages of twelve and eighteen months, having learned to stand before the end of the first year. If a good-sized child shows no ability to make movements by this time, it is probably deficient in mind, and if the power of walking is not gained by the time a child is a year and a half old, it is probably the subject either of rickets, infantile paralysis, or a malformation of the hip-joint. (See **RICKETS**, **PARALYSIS**.)

WARMING (*see* **LIGHTING**).

WARTS are small, solid growths, arising from the surface of the skin. They are, as a rule, harmless, and are objectionable only as blemishes, and not on account of any ill effects they occasion. Sometimes, however, pigmented warts, and warts that have been exposed to much irritation, develop in old people into malignant growths.

Varieties and causes.—COMMON warts develop on the skin of children and young persons in positions where the surface is exposed to much irritation, for example on the knuckles, on the backs of the hands, and on the face. Occasionally such warts come out in a crop when the person is reduced in health. **SENILE WARTS** are usually hard, wrinkled, and slightly raised areas of skin found in old people. **SOFT WARTS**, consisting of little tags of skin, are found especially upon the neck, chest, ears, or

eyelids of persons whose skin has been subjected for long to some irritation, such as that of working among paraffin. **HORNS** are formed sometimes upon the face or head, as the result of the drying up of the fatty secretion from the skin that covers a wart. **TUBERCULAR WARTS** are developed sometimes as the result of a wound in the skin of the hands, especially of those who have come in contact with persons suffering from some form of tuberculosis.

Treatment.—As a rule, warts are removed painlessly by the application of some substance which dissolves the horny surface and cauterises the parts beneath. Caustic potash, nitric acid, or lunar caustic is used for this purpose, but care must be taken that the drop of nitric acid or caustic potash applied to a wart does not run over the neighbouring skin. Several applications, as a rule, are necessary to each wart, and the wart is rubbed down with pumice stone before each application. Warts that hang by a pedicle are best removed by snipping off with scissors, the bleeding being easily checked by some astringent. When warts come in a crop, as they sometimes do, tonic remedies will generally effect their disappearance.

WASTING is a common symptom of many diseases, particularly of those which are associated with a prolonged or repeated rise of temperature, such as typhoid fever and consumption. It is also associated with diseases of the alimentary system in which digestion is inefficient, or in which the food is not fully absorbed, for example, in diarrhœa, whatever be its cause, and in diabetes. A type of wasting known as cachexia is produced by the presence of malignant tumors, especially of cancer. The commonest cause of wasting without an evident reason is early consumption.

WASTING PALSY

WASTING PALSY is a popular name for the disease more commonly known as progressive muscular atrophy. (See PARALYSIS.)

WATER-BEDS are flat, closed sacks of heavy india-rubber material, with a funnel-shaped orifice at one corner through which water can be poured, and which can be closed by a screw-stopper. They are made in various sizes, some being sufficiently large to cover a whole bedstead, though more frequently, for convenience in handling, they are of smaller size. Those of the largest size possess a special outlet at one corner through which air escapes as water enters at the opposite corner.

Water-beds have been to a great extent replaced by air-beds of strong construction.

In general a water-bed is placed under a bedridden person or one suffering from some devitalising disease of the nervous system, in order to prevent the formation of bed sores, by distributing pressure all over the patient's back. Apart from the tendency to bed sores, a patient who is long confined to bed, who is fevered, or who is much emaciated, derives a sense of great coolness and comfort from a water-bed.

Method of use.—A water-bed is placed empty upon the bed before the patient is laid on it. If this be inconvenient, a strong sheet is laid on the floor, the water-bed is placed empty upon it, and water is poured in till the bed is sufficiently full. The water-bed, which is then very heavy, is lifted by several persons who catch hold of the edges of the sheet. To fill the bed, water at a temperature of about 100° Fahr. is used, except in the heat of summer, when cold water may be preferable. This is poured into the special orifice, the corner provided with this opening being raised, so that the water will not run out again. The water-bed must not be filled tight, but should contain just so much water that its

WATER-CLOSETS

upper and lower surfaces are not pressed together when the patient lies upon it, and thus the maximum of comfort is secured. Finally, before the plug of the outlet is screwed in, any air that may have gained entrance should be pressed out. For this purpose the hand is pressed firmly over the surface of the bed towards the outlet, which is raised; the corner where the outlet is attached is twisted up as far as the water will allow and the plug is then screwed in. If air be left inside, every movement of the patient will be accompanied by splashing noises. The patient is separated from the water-bed by a blanket and the usual bed-linen.

WATER-BRASH, or **PYROSIS**, is a condition in which, during the course of digestion, the mouth fills with tasteless or sour fluid, which is generally saliva, but sometimes is brought up from the stomach. The condition is a symptom of dyspepsia.

WATER-CLOSETS.—A good water-closet must have a basin composed of some non-absorbent material shaped so as to receive the water used in flushing, and so formed as to prevent the excreta adhering to the sides, and to allow them to fall directly into the water.

VALVE CLOSETS have a movable valve, which supports a quantity of water into which the excreta are received before being projected into the water of the trap beneath, by the swinging aside of the valve as the handle is raised.

WASH-OUT CLOSETS, made of a single piece of earthenware, hold water in a basin formed by a ridge, and into this basin the excreta are received, to be later on swept over into the trap by the flush.

WASH-DOWN CLOSETS, or **SHORT HOPPERS**, in which a flushing rim is provided giving an adequate flush all round the basin, form an excellent type of closet.

The *flush* of water given to a closet should be about three gallons, but not

WATER-CLOSETS

less than two gallons, delivered by a pipe at least $1\frac{1}{4}$ inches in diameter, and every closet should be provided with its own special flushing cistern, usually formed of iron, with siphonic action, and having an overflow pipe.

Water-closets should be placed at some outer part of the building (not in some convenient recess in the centre of the house), against an external wall, so that the soil-pipe may be led straight to the exterior. The room should be provided with a window opening right up to the ceiling, and should be well ventilated.

Waste-pipes carrying off water from baths, sculleries, sinks, etc., must not be directly connected with the drain or soil-pipe, but should discharge into the open air upon a channel leading to a trapped grating at least 18 inches distant from the end of the waste-pipe.

Soil-pipes, for carrying off sewage, should be fixed outside the house, and for the purpose of ventilation should be carried in their full width above the eaves, away from windows, and protected by cowls or wires drawn across.

Traps are contrivances which prevent the sewer air from gaining entrance into the house from the drains, water being used for this purpose. The simplest form of trap is, therefore, simply a bend in the pipe which retains water.

Drains are the pipes outside one house or building, which carry away as quickly as possible to the sewer the ordinary sewage of the building. They must, to prevent pollution of the surrounding soil, be made water-tight, and, except for ventilating purposes at special points, air-tight as well. Drain-pipes are usually, therefore, formed of glazed stoneware or cast-iron. They should be laid, if possible, in a straight line, on a foundation made firm by a layer of concrete. Each pipe should fit firmly into the next, special sockets being provided on the pipes for this purpose, and the joint should be made firm by cement.

If there is any suspicion of drains

WATER SUPPLY

having become blocked or leaky, or of traps being inefficient, they can be tested by the local public health authority on application to the medical officer of health.

WATER ON THE BRAIN is a popular name for hydrocephalus and for meningitis. (See HYDRO-CEPHALUS, MENINGITIS.)

WATER SUPPLY.—In country districts the supply of water often has to be obtained from springs and wells.

Spring water is frequently rendered clear and bright by the purification it undergoes in moving through the strata of the earth before it reaches its point of issue, this natural filtration, if the water has penetrated far enough, being sufficient to remove completely the organic matter with which the water came in contact in the upper regions of the soil.

As the water from springs may be contaminated at the point of issue, the spring should be walled in and provided with a discharging pipe that passes some distance below the surface, thus conducting the water to the surface.

WELLS consist of two main forms, 'shallow' and 'deep'. Shallow wells are apt to be polluted by surface water and drainage, but deep wells yield usually an excellent, palatable supply, and, in order to protect them from pollution by surface waters, they should be lined with bricks embedded in cement down to the depth of the impermeable layer, and built up and closed in above the ground to prevent them from being contaminated at the surface.

Upland waters form such good sources of supply, being removed largely from danger of contamination by human excretions, that many of the principal towns in Great Britain now obtain their supplies in this manner. Glasgow, Manchester, and Liverpool, to mention three examples, have all tapped such

sources of supply many miles from their boundaries, and the water thus obtained for the inhabitants has contributed in no small degree to the health and general prosperity of the cities. In some cities water is drawn from rivers, and purified by large filter beds.

Water may be either 'soft' or 'hard'. The hardness is usually described as either temporary or permanent. Temporary hardness is due to the presence of the carbonates of calcium and magnesium held in solution by carbonic acid gas, which may be driven off by boiling the water. This carbonic acid gas may also be got rid of by adding slaked lime to the water, which causes the production of still more carbonate of lime. This, however, settles, with the carbonate originally present, in a sediment; and thus the temporary hardness is removed. Permanent hardness is due to the presence of the sulphates of calcium and magnesium, as well as iron and alumina, which cannot be got rid of by boiling.

Hard water entails a great waste of soap. In cooking too, hard water deposits a layer on kettles and pots, and even on the food, thus preventing the boiling water from penetrating it. Among the minor diseases caused by unduly hard drinking-water are constipation and dyspepsia, while goitre and the formation of urinary calculi have also been attributed to this cause.

Domestic purification may be carried out, where required, in various ways. *Distillation* provides an excellent, pure water, which is, however, insipid because the air has been driven off. *Boiling* renders the water softer and destroys micro-organisms, but leaves the water insipid.

Domestic filters, so commonly employed, are frequently worse than useless, giving an idea of false security and rendering the water after so-called filtration more impure

than it was before. Therefore, when a domestic filter is employed, it must be regularly and systematically cleansed, for in certain forms the organic matter, if not removed, accumulates and aids the growth of bacteria, which still further pollute the water that is being filtered.

The best forms of filter are those made of charcoal, lime and asbestos, like the Maignen filter; or those consisting of a cylinder of unglazed porcelain or similar material. The water can be forced through the latter under pressure, as by attaching it to a water-pipe.

Diseases spread by water.—Impure water may cause disease simply in general forms, such as diarrhoea, dysentery, sickness, and dyspepsia due to the suspended materials present, while excessive presence of mineral matters and hardness may lead to digestive disturbance and constipation. Peaty matters, if in excess, may give rise to similar disturbance, while the presence of polluting sewage may create severe abdominal disturbance in the form of colic, vomiting, and purging. A more serious mode in which water may give rise to disease is in its being able to convey the special germs of disease, such as enteric fever. Various parasites may find their way into drinking-water and be received into the stomach of man in the form of eggs or embryos.

Poisoning by various metals may arise from trade-washings that pass into a stream, or by the solution of the metallic constituents of the water-pipes, as in lead-poisoning.

WATER TREATMENT (*see* BATHS, DOUCHES, WET PACK).

WAX is used in medicine as an ingredient of ointments, plasters, and suppositories. It is used either as yellow wax derived directly from honey-comb, or as white wax which is the same substance bleached.

For Wax in the Ear, *see* EAR, DISEASES OF.

WEAKNESS

WEAKNESS (*see* ATROPHY, CACHEXIA, PARALYSIS, TONICS, and under the heads of various weakening diseases, *e.g.* CONSUMPTION, DYSPEPSIA, NEURASTHENIA).

WEALS, or **WHEELS**, are raised white areas on the skin with reddened margins, which may result from sharp blows, or may be a symptom of nettle-rash.

WEANING (*see* INFANT-FEEDING).

WEIGHT and HEIGHT.—The weight of a child at birth is about 7 to 8 lb., and the height 18 to 20 inches. During the first year the infant puts on weight at the rate of about 5 oz. per week if no illness occurs, and at the age of one year weighs from 18 to 24 lb. In the first year it increases in height about 10 inches, and measures almost 30 inches at one year old.

Shortly after attaining the age of two years, the child reaches half its final adult height. Thereafter growth in weight and height are slower, but, on the average, up to the age of fourteen years height increases at the rate of $2\frac{1}{2}$ inches each year. This increase is not uniform, however, and its rate depends upon family peculiarities, the development of the endocrine glands, the feeding of the child, the occurrence of illnesses, etc.

Growth is most rapid during the first five years of life, the rate being about the same in both sexes. From five to ten, boys grow more rapidly than girls, but from ten to fifteen, girls grow more rapidly than boys, and about the end of this period they are actually taller and slightly heavier than boys of corresponding age. From fifteen to twenty, boys again increase more rapidly than girls, and while girls reach their full height about twenty, boys continue to grow slightly up to the age of twenty-four. Increase in weight is more marked during winter and increase in height during summer. During the period from five to ten years, growth in weight proceeds at the rate of 4 or 5 lb.

WET PACK

yearly, but from ten to fifteen, 8 or 10 lb. weight may be added in one year. After the full height is reached, growth in weight continues at an average rate of about $\frac{3}{4}$ lb. each year until the age of fifty, when the increase in weight should cease in both sexes, and thereafter diminish somewhat if health and activity are to be maintained and long life is to be achieved.

For a table of weight in relation to height, and for reduction of excessive weight, *see* CORPULENCE.

WENS are small cystic tumors in the skin, consisting of a collection of fatty material, due to blockage of the outlet from a sebaceous gland. They occur most commonly about the face and scalp, where they form smooth, rounded, elastic tumors often of a considerable size, but give rise to no trouble save that occasioned by their position, by their unsightliness, and by the fact that they are liable to become inflamed from the pressure of the hat, etc.

Treatment consists in opening the cyst, squeezing out its fatty contents, and carefully removing the lining membrane. The little operation is usually performed under a local anæsthetic, and is accompanied by very little pain.

WET PACK is a method of treatment much in vogue in some countries and with some physicians, for the purpose of applying a moderate degree of cold or of heat, for some time, to a patient's skin.

The wet pack is a specially convenient method of applying cold when it is desired to exert a gentle cooling influence over a prolonged period, one hour or more, and at the same time to maintain the patient in a condition of absolute quiet and rest. It is used, for example, in such conditions as neurasthenia, and exhaustion due to heat.

Hot wet packs are also applied, *e.g.* in Bright's disease.

Method of application.—(1) COLD

WHEEZING

PACK.—A mackintosh sheet covered by a large blanket is spread upon the bed, and, when the patient is ready, a sheet is dipped in cold water, wrung out fairly dry, and laid over the blanket. The patient, stripped, is laid upon the sheet, which is quickly turned over him from both sides, and pushed between his legs and between each arm and the chest, so that skin does not touch skin anywhere. This must be done quickly, and the sheet being neatly tucked in round the neck and folded beneath the feet, every part of the body is covered saving the head and face. The head may also be wrapped in a wet towel. Finally the sides of the blanket are turned over the patient, and wrapped round him so as to lie smoothly everywhere. The patient, enveloped in this pack, lies absolutely helpless and should on no account be left by the attendant till the pack is removed, when he is put back into bed.

(2) **HOT PACK** is applied in a similar way, the sheet and cold water being replaced by a blanket which has been wrung out of boiling water.

WHEEZING is a popular name applied to the various sounds produced in the chest when the bronchial tubes are inflamed. It is applied particularly to the long-drawn breathing of asthma, and to the whistling or purring noises that accompany breathing in cases of bronchitis. (*See* **ASTHMA**, **BRONCHITIS**.)

WHITE LEG is a fairly common and well-known condition in which a limb, usually one of the lower limbs, becomes enlarged, white, and painful.

Symptoms.—The disease comes on during convalescence from childbirth, pneumonia, and other febrile conditions, beginning with slight feverishness and pain down the leg which is to be affected. The limb gradually swells, and in a few days may be greatly enlarged, hard, glossy, and of a strikingly white colour. The veins can generally be felt as solid lines down the inner side of the thigh, and

WHITES

the affected parts may be very tender to the touch. These symptoms persist for a week or so, but generally begin to subside within a fortnight from the onset, and about three-fourths of all cases recover completely in a few weeks. In other cases, some degree of muscular weakness, swelling, or aching of the limb remains permanently, but the condition, though a serious one demanding most careful treatment, is very seldom fatal.

Treatment consists chiefly of rest in bed with the affected limb supported on a pillow. Absolute quiet is essential, on account of the dangers mentioned under **VEINS**, **DISEASES OF**. Pain is relieved by laudanum fomentations or simply by wrapping the limb in cotton-wool, and various tonics are administered at a later stage in order to improve the general condition.

WHITE PRECIPITATE is the popular name for ammonio-chloride of mercury, a substance much used in ointment for application to various skin diseases.

WHITES, or **LEUCORRŒA**, is a symptom of many diseases peculiar to women, and may be of an acute nature, when the discharge is thick and white, consisting mainly of pus, or is more often chronic and catarrhal, when the discharge is usually thinner, sometimes of a clear mucous nature, in other cases acrid and offensive.

Treatment.—Constitutional remedies are of importance in almost all cases, and include good diet, tonics of iron, bracing treatment, such as the daily cold bath. Frequently, change of air is recommended, and patients troubled by this condition betake themselves to bathing-places where the water is supposed to possess special value in relieving internal congestion. As regards local measures, the careful regulation of the bowels is of great importance, and the cleansing and soothing action of the warm douche is the chief method of treatment. (*See* **DOUCHE**.) In simpler cases it is often sufficient to use plain water for the

douche, or water tinted to a pink colour with permanganate of potassium. The douche should be large in amount, at least a quart, and should be regularly used, either once or twice daily. In more intractable cases, various astringents such as alum, sulphate of zinc, and vegetable infusions containing tannin, or antiseptic substances such as perchloride of mercury, are added to the water of the douche.

If, however, the condition be due to some definite disease, these measures are no more than palliative, so long as it remains untreated, and some special form of treatment becomes necessary. (See UTERUS, DISEASES OF.)

WHITE SWELLING is a popular name applied to tubercular disease of joints. (See JOINTS, DISEASES OF.)

WHITLOW is a popular term applied to all acute inflammations of the deep-seated tissues in the fingers, whether the structure affected be the root of the nail, the pulp of the finger-point, the sheaths of the tendons that run along the back and front of the fingers, or the bone. Acute inflammation of the bones in the finger is very rare, and in general a whitlow begins in the last part of one finger.

Symptoms.—The first sign is a throbbing pain in one of the fingers, made worse by hanging the hand, and relieved somewhat by elevation. Swelling and redness round the root of the nail or in front of the finger next appear, and the affected part becomes very tender to the touch. In the severer forms, the whole hand becomes much swollen, the glands in the armpit enlarge, there is general feverishness, and symptoms of blood-poisoning may appear.

When the tendon-sheath becomes inflamed, the pus may find its way into the joints of the finger, which is therefore left stiff and useless after the inflammation subsides.

A severe whitlow is much more serious if situated in the thumb or little finger, than in any of the three middle fingers.

Treatment.—Warm fomentations which relieve the pain, and an opening through the tough skin of the finger in order to let the pus escape, and prevent it from burrowing deeply, form the proper line of treatment. One of the best fomentations consists of a folded piece of boracic lint wrung out of hot water, covered by a piece of oil-silk, and frequently changed. In severe cases, great relief is often gained by steeping the forearm and hand for an hour or two at a time in a bath containing warm boracic acid lotion or weak iodine solution.

WHOOPIING-COUGH, also known as HOOPING-COUGH, PERTUSSIS, and CHIN-COUGH, is an infectious disease of the mucous membrane lining the air passages, with frequent attacks of convulsive coughing followed by peculiar, loud indrawing of the breath, and often by vomiting. It occurs mostly in children, and seldom more than once in a lifetime.

Symptoms.—Three stages of the disease are recognised, viz. (1) the catarrhal stage, (2) the spasmodic stage, (3) the stage of decline.

The *first stage* is characterised by the usual symptoms of a catarrh, with sneezing, watering of the eyes, irritation of the throat, feverishness and cough, but in general there is nothing in the symptoms to indicate that they are to develop into whooping-cough. The catarrhal stage usually lasts from ten to fourteen days.

The *second stage* is marked by the abatement of the catarrh, but at the same time by increase in the cough, which now occurs in irregular paroxysms both by day and by night. Each paroxysm consists in a series of violent and rapid coughs, succeeded by a loud crowing inspiration—the ‘whoop’. The paroxysm ends by the coughing or vomiting up of a sticky secretion, and usually after this the patient seems comparatively well, or, it may be, somewhat wearied and fretful. This stage of the disease

WHOOPIING-COUGH

usually continues during four to seven weeks, but it may be shorter or longer. It is during this time that complications are apt to arise which may become a source of danger greater even than the malady itself. The chief of these are inflammatory affections of the bronchial tubes and lungs, and convulsions, any of which may prove fatal. A milder but very frequent complication is the formation of a small ulcer under the tongue from rubbing against the teeth in coughing.

When, however, the disease progresses favourably, as it usually does, it passes into the *third stage*, in which the cough becomes less frequent and generally loses its 'whooping' character. The patient's condition altogether improves, and the symptoms disappear in from one to three weeks. Whooping-cough is one of those diseases of early life which are apt to give rise to a weakened state of the general health, or to call into activity any tendency to disease, such as that towards consumption.

Treatment.—As regards the treatment of whooping-cough in mild cases, little is necessary beyond keeping the patient warm and carefully attending to the general health. The remedies applicable in the case of the milder forms of bronchitis are of service here, while gentle counter-irritation to the chest by stimulating liniments may be employed all through the attack. In mild weather the patient may be in the open air. In the more severe forms, efforts have to be employed to check the paroxysms. Numerous remedies are recommended, the chief of which are the bromides of ammonium or potassium, chloral, belladonna, etc. During convalescence, where the cough still continues to be troublesome, a change of air will often effect its removal. Recently a vaccine has been prepared from the bacillus to which the disease is attributed as well as from other bacteria of bronchial catarrh. Injections of this

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vaccine have been used both as a preventive in the case of children attending schools where cases of the disease have occurred, and also for treatment of children already affected.

WINDPIPE is the popular name for the trachea, which extends from the larynx above to the point in the upper part of the chest where it divides into the two large bronchial tubes, one to each lung.

WIND SUCKING is the name applied to a habit which some persons, especially when suffering from dyspepsia, contract of swallowing mouthfuls of air. This at first gives relief to the discomfort and pain of indigestion, but later prolongs and aggravates it.

WINTER COUGH is a name sometimes given to chronic bronchitis which affects old people specially. The cough passes off during summer and returns with the damp weather each winter. (*See BRONCHITIS.*)

WINTERGREEN, or **GAULTHERIA**, is an American evergreen plant containing an oil with peculiar smell and aromatic taste. The oil consists almost entirely of salicylate of methyl. The action of this oil, taken internally, is almost the same as that of salicylate of soda; but, as the oil causes considerable irritation of the stomach, salicylate of soda is nowadays generally used instead. Externally, oil of wintergreen is applied by rubbing to painful joints in cases of acute and chronic rheumatism, often giving great relief.

WITCH-HAZEL is a preparation of the bark, twigs, and dried leaves from a plant of the United States possessed of strong astringent properties. Tincture of witch-hazel is used to check hæmorrhages and excessive mucous discharges, and also for piles. Ointments known as hazeline snow, hazeline cream, etc., are much used as applications for irritable states of the skin.

WOMB (*see* UTERUS).

WORMS.—The worms which

WORMS

occasionally infest human beings are found chiefly in the intestine, although one makes its habitat in the walls of the bladder, another burrows in the muscles, and another group are found in the lymph spaces in various parts of the body.

The most commonly occurring worms belong to the group of round worms, and include the following :

THREAD WORMS are the most common of these parasites, and the least harmful. The thread worm is about $\frac{1}{4}$ -inch long, white, and resembles a small piece of thread. These worms live in considerable numbers in the lower bowel of children, and cause great irritation, often diarrhœa, and in weakly children, nervous symptoms such as grinding of the teeth, picking of the nose, or even convulsions.

Treatment is effected by repeated doses of Epsom salts, but more effective treatment consists in giving an enema, either of strong brine made from common salt in tepid water, or an enema of infusion of quassia. The amount of the enema to be given is usually about 4 ounces.

ROUND WORMS, also known as maw worms, or ascaris, are of larger size, being rounded, of a pale brownish colour, and 10 or 12 inches in length, with a close resemblance to a large earth-worm. Two or three of these worms may be present, and they are sometimes vomited up or passed in the stools. They give rise to few symptoms beyond excessive appetite for food, and sometimes diarrhœa or colic.

Treatment is usually effected by administering 2 grains of santonin powder to children, or 5 grains or more to an adult, followed by a dose of calomel or salts, and repeated, if necessary, for several days.

WHIP WORMS are not often found in Britain, but are common in France. This worm inhabits the large intestine, seldom gives rise to much trouble, and may be expelled by doses of thymol.

HOOK WORMS, also known as the

WORMS

tunnel-worm or ankylostoma, are not often found in Britain, but in some Eastern countries are very common and an important cause of severe bloodlessness. Epidemics of bloodlessness due to the presence of this worm occasionally appear among workers in a tunnel or a mine, and in India are very common among agricultural labourers. The worm gains access to the body in drinking-water, or by burrowing through the sodden hands or feet of those working in water. The worm is found in large numbers in the upper part of the small intestine, embedded in the mucous membrane.

FILARIÆ are thread-like worms found only in tropical climates, which sometimes cause blockage of lymphatic vessels with resulting swelling of a limb or other part.

TAPE WORMS are long, flattened worms, white in colour, and resembling, as their name implies, a piece of tape. Several varieties of these occur, but all produce much the same symptoms of hunger and occasional signs of intestinal irritation. The worm has a head about the size of a small pin's head, which adheres to the wall of the bowel and produces segments that gradually increase in size towards the end of the worm. The worm may reach a length of 10 or 20 feet, and the terminal segments are broken off from time to time either singly or in lengths of a few inches, and appear in the stools. Each of these segments is a flat white object, about $\frac{1}{2}$ -inch long and $\frac{1}{4}$ -inch broad.

Treatment consists in administering some substance which is poisonous to the worm, but comparatively harmless to the affected person. Of these the principal is an extract of the root of the male fern. After a day of starvation, a dose of the extract of male fern is administered at night, and a purgative is taken in the morning. The worm may then be expelled entirely, or several similar courses of treatment at intervals may be necessary.

WORMSEED

One of the tape worms is found in the mature form in the dog, and is occasionally transmitted in the embryonic form to human beings, whose food has been soiled by a dog affected in this way. A result in the human being is the production of hydatid cysts in various internal organs.

FLUKE WORMS, which are flattened creatures of a leaf shape, are occasionally found in human beings. The liver fluke, which is common as a disease of sheep, is occasionally found in human beings, causing symptoms of jaundice. Bilharzia, a parasite which is common in Africa, is occasionally brought to Britain by persons who have become affected in Egypt or South Africa. It causes occasional attacks of blood in the urine. A similar parasite causes attacks of bleeding from the bowel. Another fluke worm, found in the far East, lives in the lungs, and causes spitting of blood and other symptoms resembling consumption.

WORMSEED is a popular name for santonin. (See SANTONIN.)

WOUNDS.—A wound is any break or tear suddenly produced in the tissues of the body. An extensive injury of the deeper parts without corresponding injury of the surface is known as a bruise or contusion.

A wound may be *incised* or clean cut, *punctured* or stabbed, *lacerated* or torn, and *contused* or bruised.

First-aid treatment.—The first duty of a bystander who renders help to a wounded person is to check any bleeding. This may be done by pressure upon the edges of the wound with a clean handkerchief, or, if the bleeding is serious, by putting the finger in the wound and pressing it upon the spot from which the blood is coming. If necessary, the person may then at his leisure apply other methods described under HÆMORRHAGE.

If a medical man is to see a wound within a few hours, it should not be interfered with further than is neces-

WOUNDS

sary to stop the bleeding and to cover the wound with a clean dry handkerchief or piece of lint. In cases where expert assistance is not soon obtainable, one of the following procedures may be adopted. The bleeding being checked, the next step is to cleanse the wound and surrounding skin.

This may be done :

(a) *By painting freely with tincture of iodine* the wound and the surrounding skin, and covering with a piece of clean dry lint; this answers well in the case of small wounds and abrasions.

(b) *By washing with clean water* (preferably boiled). For this purpose, one requires two *clean* bowls scalded out quickly with boiling water, and filled with *clean* warm water; also several *clean* cloths, which may be handkerchiefs, squares of lint (preferably boracic lint), or newly washed rags.

(1) First, it is essential that the person who is to dress the wound should wash his own hands, and especially the nails, thoroughly with soap and water.

(2) Press a clean cloth upon the wound to prevent the entrance into it of dirty water, and carefully wash the skin around the wound with water from one of the bowls, using soap if necessary.

(3) Wring out a fresh cloth from the clean water in the second bowl, and with it gently dab the wound. Remove, replace by another clean cloth similarly wrung out, and fix it on the wound with a folded handkerchief.

(4) The injured part is finally fixed so that movement is prevented or minimised. A wounded hand or arm is fixed with a sling (see SLINGS), a wounded leg with a splint.

(5) If the injury has caused severe shock, stimulants may be necessary. (See SHOCK.)

Dangers of wounds.—**BLOOD-POISONING** usually means that germs have entered the circulation, which is a very grave occurrence and is frequently fatal. (See BLOOD-POISONING.)

WOUNDS

HÆMORRHAGE.—*Primary hæmorrhage* means bleeding which occurs at the time of the injury. A large vein or artery may have been divided and may require to be tied. (See HÆMORRHAGE.) A wound of a large vessel like the femoral artery may cause death in a few minutes if untreated. *Reactionary hæmorrhage* takes place sometimes from wounds which do not bleed much when they are first inflicted. *Secondary hæmorrhage* occurs only in the case of poisoned wounds. The spread of the infection breaks down the blood-clot which has formed and allows the escape of blood. It is usually preceded by a slight oozing of blood, which serves to forewarn the medical attendant. This form of bleeding seldom occurs earlier than a week from the date of the injury.

PARALYSIS.—In a wound of a limb, one of the nerves may be divided. When this has happened, a definite area of skin is found to have lost the sense of touch and pain, and the muscles supplied by the divided nerve have completely lost their power. The tendons, which attach the muscles to the bones, may also be divided, as, for example, by a wound behind or in front of the wrist, causing loss of power in the injured part.

SCALP WOUNDS usually heal well, but in deep scalp wounds there is a danger that suppuration may result and may pass within the skull. Again, a severe blow producing a scalp wound may cause fracture of the skull and concussion or compression of the brain. (See BRAIN DISEASES.)

CHEST WOUNDS.—Stabs of the chest are serious chiefly because of the fatal bleeding likely to follow any wound of the heart or large vessels; and a less serious danger attends wounds of the lung.

ABDOMINAL WOUNDS.—A penetrating wound of the abdomen, particularly when the bowel has been cut, is frequently fatal from the acute general peritonitis which it causes.

WOUNDS

General treatment of wounds.—**CHANGING THE DRESSING.**—If the wounded surfaces are in contact, the dressing should not be changed unless pain is felt in the wound, discharge from the wound soaks through the dressing, a rise of temperature occurs, or the part feels uncomfortable, until the tenth day, when the dressing is removed altogether.

DRESSINGS AND LOTIONS.—One of the most convenient and economical dressings for direct application to a wound is boric lint. Another is cyanide gauze, *i.e.* gauze impregnated with the double cyanide of mercury and zinc; it usually contains free particles of this substance, and therefore should always be moistened before use.

Of the many lotions, 1 part of carbolic acid in 20 parts of water possesses the advantage of being a powerful antiseptic which is volatile and soothing. It should not be applied to a large surface owing to the risk of absorption and carbolic acid poisoning. Perchloride of mercury in a strength of 1 part to 1000 parts of water, or lysol 1 part in 100 of water may be used. Immediately before their application to a wound, *these lotions are usually diluted with an equal quantity or more of warm water.*

STITCHES.—If the wound be of the incised variety, with wide separation of the edges, it may require to be stitched.

Treatment of discharging wounds.—If a wound should suppurate, it must receive treatment which will enable the pus to escape freely while the wound slowly closes. This is provided by inserting a drainage tube, or a strip of gauze, into the wound. To prevent the pus drying up and retaining the discharge, and to draw the pus out of the wound, a moist dressing is applied. A piece of lint soaked in sterilised water, or boracic lotion (1 in 60), or perchloride of mercury lotion (1 in 3000), is applied to the wound. The lint is covered

WRIST

with a larger piece of waterproof material, such as gutta-percha tissue, or oil-silk; over this a still larger piece of cotton-wool is applied, and the whole is fixed by a bandage. This dressing is changed daily until the discharge ceases.

WRIST is the joint situated between the arm above and the hand below.

The joint is capable of movement in all directions, and, on account of its shape and its numerous ligaments, is very little liable to dislocation, although stretching or tearing of some of these ligaments is a very common accident, forming a sprain. (*See JOINTS, DISEASES AND INJURIES OF.*) Inflammation of the tendon-sheaths before and behind the wrist, causing

WRY-NECK

the presence of fluid, also results occasionally from an injury, and produces a sense of weakness in the wrist. A fairly common condition is that known as a ganglion, in which an elastic swelling full of fluid develops on the back or front of the wrist in connection with the sheaths of the tendons. (*See GANGLION.*)

WRIST-DROP (*see DROP-WRIST*).

WRITER'S CRAMP (*see CRAMP*).

WRY-NECK is a condition in which the head is twisted to one side. It may be caused by the contraction of a scar, such as that resulting from a burn, or by paralysis of some of the muscles, but in the great majority of cases it is a spasmodic condition due to excessive tendency of certain muscles to contract. (*See CRAMP.*)

X

X-RAYS, or RÖNTGEN RAYS, since their discovery in 1896, have come to occupy a position of great importance in medicine, both for diagnosis and treatment. The X-rays are produced by the passage through a vacuum tube of an electric current at high potential. For bringing the tube into action, a source of electricity is essential, and this is usually derived from the electric mains and suitably modified by complicated apparatus before being passed through the tube. For many years workers with X-rays failed to realise that the constant exposure to these rays of the hands and other parts of the body constituted a serious danger to the operator. X-ray tubes are now efficiently protected by lead screens, and the workers as a further precaution wear leather gloves lined with lead foil, so that danger is now removed.

The general principle underlying *diagnosis* by means of X-rays is that when a stream of X-rays is passed through the body, deep shadows are cast by dense objects such as bullets and metallic particles, lighter shadows by the bones, and a faint shadow by the soft parts. Various dense substances, in themselves harmless, can be introduced into hollow organs of the body, thus enabling a shadow of their interior to be obtained. For example, salts of bismuth or barium are mixed with food and enable the shape and action of the stomach and bowels to be studied; lipiodol, an oily substance containing iodine, may be injected into the bronchial tubes or uterus in order to show changes in their shape and size; and other substances which are excreted in the bile or in the urine enable the gall-bladder or the kidneys to be examined.

The shadows cast by solid organs of the body, or by these substances in the interior of hollow organs, may be viewed immediately upon a fluorescent screen, when the action of the

beating heart and other moving organs may be studied. A permanent record of these shadows may also be obtained by taking advantage of the fact that the X-rays affect an ordinary photographic plate in the same way as light does, so that a permanent photograph or radiogram is obtained. By taking photographs from different directions, the position of foreign bodies, such as bullets for example, may be localised with great accuracy.

In *treatment*, X-rays have also come to play a very important part. Mild applications of X-rays form a useful stimulating influence to aid the healing of ulcers and similar conditions which are slow in returning to a natural state. X-rays in carefully controlled dosage are used in the treatment of ringworm, the amount of treatment being so graduated as just to cause the hair to fall out. The parasite of the disease is removed with the hair, and the bare scalp is more easily treated by other applications, the hair later growing again if the dose has not been too strong.

The special disease upon which more powerful doses of X-rays have been found to exert a retarding influence is cancer. For this purpose very powerful apparatus capable of developing highly penetrating rays has been introduced. The object in this form of treatment is to administer the X-rays in amount sufficient to kill the cancer cells while avoiding damage to the normal tissues. Great success has been obtained by this means in the treatment of cases which are not suitable for operation, or in combination with surgical procedures. In various other diseases where operation is unsuitable, or in which the patient declines operation, X-rays are of great use; for example, the spleen and bones may be subjected to the action of the deeply penetrating rays with great benefit in such diseases as leucocythæmia and splenic anæmia.

Y

YEAST is a ferment employed in the brewing of beer, making of bread, etc. It may be used in its natural form as a remedy, of which a tablespoonful or thereabout is stirred up in milk or water. It can also be obtained in a dry powder, of which a teaspoonful is similarly taken. It is much used internally in the treatment of boils, and occasionally in other infective conditions.

YELLOW FEVER, also known as **YELLOW JACK** and **VOMITO AMARILLI**, is an acute disease of certain tropical localities, characterised by fever and jaundice. The infection is carried by a mosquito. The danger of the disease in localities that were once very unhealthy has been greatly lessened by taking measures to kill or keep off these insects.



Z

ZINC is a metal of which several salts are used in medicine for external application. Its salts fall into two classes: soluble and insoluble. The important soluble salts are the acetate of zinc, sulphate of zinc, and chloride of zinc. All, and especially the chloride, are powerful antiseptics.

The insoluble salts that are of importance are the oxide and carbonate, which have simply an astringent action.

ZYMOTIC DISEASES is a term in medicine applied by some authorities to the class of acute infectious maladies.



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